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IBM preps new OS/2 NetView

BY MICHAEL COONEY

Raleigh, N.C.

Like a phoenix rising from the ashes, IBM will soon roll out a retooled, reconfigured and reincarnated version of its LAN NetView management product, dubbed NetView for OS/2.

NetView for OS/2 will replace LAN NetView and retain most of its systems management functions. But the new product will have a broader scope, with new Simple Network Management Protocol capabilities and improved network management features that give users a single integrated view of both their Systems Network Architecture and non-SNA local network resources across the enterprise.

NetView preview

IBM is going to replace its LAN NetView management platform with NetView for OS/2, an SNMP-based network and systems manager that offers many of the same functions as IBM's NetView/6000 but on an OS/2 platform.

It will also be delivered in a neater package.

"Users will be able to buy NetView for OS/2 as a single integrated package for enterprise LAN management, rather than the multiple pieces they have to buy with LAN NetView," said Roger Rae, a product advocate with IBM's NetView development group.

NetView for OS/2 will incorporate LAN NetView features — including the ability to monitor the available disk space and applications on LAN workstations, as well as track the performance of LAN-attached devices — but will be quite different in other respects. Most notably, NetView for OS/2 will use

See NetView, *page 61*

Wellfleet and SynOptics plan blockbuster merger

BY JIM DUFFY AND SKIP MACASKILL

Waltham, Mass.

Users expect last week's proposed merger between Wellfleet Communications, Inc. and SynOptics Communications, Inc. to play a major role in defining an industrywide shift to ATM switch-based internetworks.

The resulting billion-dollar company should fill technology gaps in each company's product line as well as help customers evolve from traditional router-based backbones to packet- and cell-based switched networks.

JOHN COLLETTI

Wellfleet's Severino

"If you're putting together a global network, you need a seamless, integrated approach that handles routing as well as switching," explained Jeff Marshall, managing director of communications at Bear, Stearns & Company, Inc. in New York. "This deal is significant since it brings those technologies together and provides common interfaces and management to make implementation of these networks easier."

Wellfleet, the No. 2 router vendor, plans to merge with SynOptics, the market's leading hub maker, in a stock deal worth more than $1 billion. Technically, Wellfleet is acquiring SynOptics based on the terms of the stock swap, but the companies referred to the deal as a "merger of equals."

While the deal is certainly a blockbuster, industry observers voiced several concerns, with some wondering if the deal will even be finalized.

According to Rick Malone, principal at Vertical Systems Group, a consultancy in Dedham, Mass., the merger raises questions about how the companies' cultures can be meshed, how fluently the new firm can be managed when the two central

See Merger, *page 61*

A billion-dollar company is born

	SynOptics	Wellfleet	Combined
Annual revenue (in millions)	$713.0	$323.1	$1,036.1
Employees	1,700	1,350	3,050
Primary products	Intelligent hubs, Ethernet LAN switches, ATM switches and network management	Routers and network management	ATM devices with integrated routing and LAN switching
R&D funding (in millions)	$196.8	$69.8	$266.6

SynOptics Communications, Inc. WELLFLEET communications

Transaction reaction

- Vendors, analysts expound on the deal. Page 21.
- Financial issues cloud merger's chances. Page 61.

U.K. firm readies SNMP database management tool

BY BARB COLE

London

Micromuse plc, a systems integration company here, is readying an object-oriented tool that will enable net administrators to better manage distributed Oracle Corp. databases and applications across an enterprise.

The Simple Network Management Protocol-based product, called Netcool/3, will alert net administrators when database links go down and supply information about the processors on which those databases run.

The software is designed to let net administrators define relational databases and their contents as objects to be monitored and moved across a network. It can run on a stand-alone management console or alongside existing platforms such as SunConnect SunNet Manager, Hewlett-Packard Co. OpenView Node Manager, and IBM NetView/6000 and NetView for Sun Solaris.

Netcool/3, which is scheduled for delivery in the fourth quarter, initially will work with only Oracle databases. However, the company plans to issue versions for monitoring databases from Sybase, Inc. and

See SNMP, *page 63*

What's hot with Netcool/3

- Allows for centralized or distributed management of Oracle databases.
- Lets administrators define databases and applications as objects.
- Uses SNMP.
- Can work with SunNet Manager, NetView and OpenView.

Integrated apps slash hold time

BY KEVIN FOGARTY

Columbus, Ohio

Tired of leaving callers on hold while customer service reps searched for answers, Huntington Mortgage Co. developed an application that could be all things — at least to some people.

Those people are some 60 customer service representatives who previously used multiple terminals to access data from local and remote mainframes, Unix databases and a document imaging system, and who even used pocket calculators to figure rates.

Making customers wait while representatives whirl between terminals and fiddle with calculators is no way to attract business, said Cary Serif, manager of applied technology for Huntington Bancshares, Inc., the $20 billion holding company that owns the mortgage company.

To remedy the situation, the firm developed an integrated service workstation application comprising a set of components that run on an Oracle Corp. database and OS/2 workstations.

The application runs dynamic SQL queries against a DB2 database on a local mainframe and an Oracle database running on Unix. It also extracts data from a

See Integrated apps, *page 62*

PRODUCT REVIEW

ProShare packs PC video punch

NETWORK WORLD TEST ALLIANCE

Intel's desktop videoconferencing package is impressive with its intuitive interface and clean design, but ISDN requirements may pose a problem.

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Briefs

CDPD gets a paying customer. Federal Express Corp. last week said it has signed on as a commercial customer of McCaw Cellular Communications, Inc.'s AirData Cellular Digital Packet Data (CDPD) service. FedEx said it will go live with AirData in Las Vegas and another undetermined city this fall to augment its existing private radio network, which it uses to manage package tracking and delivery. However, FedEx said most of its functional and financial expectations for the CDPD net are as yet undetermined.

A multirate date. WilTel will begin offering multirate Integrated Services Digital Network service on July 22 in Dallas; Kansas City, Mo.; Little Rock, Ark.; St. Louis; and Topeka and Wichita, Kan.

The service will allow users to dial up digital connections in 64K bit/sec increments for applications such as local-area network interconnection and network backup. Service in additional areas will depend on local carrier support for multirate ISDN. Pricing will be based on distance and time of day, with a 64K bit/sec daytime call of less than 100 miles costing 20.3 cents per minute.

WilTel: (918) 588-3210.

You're important, too. Sprint Corp. today will announce a service that gives midsize businesses a single rate for all interstate telephone calls, including calling cards, regardless of mileage, time of day or day of week. The service is part of Sprint's new Real Solutions package that includes the establishment of a Sprint Business Center in Dallas. Customers with bills of $2,000 to $10,000 per month can call for help at no additional charge.

Bell-evision. Having failed to bring off a merger with cable television giant Tele-Communications, Inc., Bell Atlantic Corp. will be leading the regional Bell holding companies into cable programming anyway. The carrier last week became the first regional Bell holding company to win approval from the Federal Communications Commission to provide video dial-tone service.

Bell Atlantic will build a fiber-to-the-curb system serving 38,000 homes and businesses in Toms River, N.J. The carrier's partner is FutureVision of America Corp.

Going the management route. CrossComm Corp. this week is expected to announce a new version of its Internetworking Management System router management software that supports the company's Integrated Branch Node and XLS remote branch office devices. The software will allow users to depict the devices graphically on a topological map, collect and respond to events, gather statistics and diagnostic information, and perform configuration and inventory management on them. CrossComm declined to comment.

Name game. Now let's get this straight: Three weeks ago, WordPerfect Corp. changed the name of its messaging products from WordPerfect Office to Symmetry. Last week, WordPerfect said it is changing the name again, to GroupWise. Seems Sequent Computer Systems, Inc., which makes a Unix server called Symmetry, and Workstation International, Ltd., a British company that makes a contact-management program of the same name, threatened legal action.

And plenty of free parking. Digital Equipment Corp. may be on the verge of selling off large chunks of itself, but it's also moving into a new market: on-line shopping. Digital, which already has its own product catalogs online, is now selling space on its Internet World-Wide Web server to other companies.

The first shop in Digital's E-mall is the Vermont Teddy Bear Co. If you're dying for something small and fuzzy, point your Web browser at http://www.service.digital.com/html/emall.html.

Contacts

ADDRESS: Network World, 161 Worcester Rd., Framingham, MA 01701. PHONE: (508) 875-6400; FAX: (508) 820-3467; INTERNET: network@world.std.com.; BBS: Interact with other readers: download free software, submit letters to the editor, leave news tips, change of address requests or hunt for jobs by using your IBM, Apple or other computer to dial into the BBS at speeds up to 9.6K bit/sec by dialing (508) 620-1178 or (508) 620-1160. READER ADVOCACY FORCE (R.A.F.) HOTLINE: Contact us with story tips about pressing user issues, (800) 622-1108, Ext. 487; NETWORK HELP DESK: Contact Dana Thorat via any of the above means.

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Building the back roads *of the* Internet

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Network HELP *desk*

Network World *tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Dana Thorat at (800) 622-1108, via fax at (508) 820-3467, via the Internet at djt@world.std.com or via CompuServe at 73244,2673.*

Is there a central clearinghouse, like the Internet Network Information Center (InterNIC) on the Internet, where organizations can register their NetWare Internetwork Packet Exchange (IPX) Network addresses?

Ira Goldstein, Albany, N.Y.

Ronald Nutter, network systems engineer at IntraSource, Inc., a Novell, Inc. Platinum-authorized reseller and service center in Lexington, Ky., replies:

Currently, there is no central clearinghouse for registering IPX Network numbers. Registering IPX numbers is usually only an issue when connecting to a wide-area network to ensure proper routing of IPX packets between servers. AT&T is working with Novell on a joint project to create an IPX-based version of the Internet. General availability of the service, to be offered and managed by AT&T, is expected in the first quarter of next year.

I am a member of a college project team that is attempting to establish a video link with associate universities in Volgograd Russia; Osaka, Japan; Shangai, China; and Mexico City. Our efforts would be shared by two other schools in New Jersey, which might amount to about 48 hours per week of video usage time when all three schools are ramped up to full usage.

Our problem is with the cost of international high-speed telecommunication lines. The rates we have been quoted for international switched ISDN 112K bit/sec from AT&T, Sprint Corp. and MCI Communications Corp. are out of our budget and do not warrant the cost of permanent equipment for the overseas locations. Can you suggest alternate sources for less expensive international lines that we may have overlooked?

Joe Macalla, Bloomingdale, N.J.

Lawrence Uline, a senior consultant at Lynx Technologies, Inc., a Little Falls, N.J.-based consultancy specializing in international networks, replies:

See **Help desk,** *page 50*

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Chipcom to bulk up ONcore with token-ring modules

BY SKIP MACASKILL

Southborough, Mass.

Chipcom Corp. this week will unveil the first token-ring modules for its ONcore Switching System hub, including a module that will allow net managers to dynamically assign users to different network segments on a per-port basis.

The company, based here, will also roll out network management and jitter attenuator daughtercards to provide users with more reliable and manageable local networks.

IBM, which resells a version of ONcore as the 8260, is expected to announce the same suite of modules and daughtercards in a separate announcement this week, according to sources.

The modules, which were codeveloped by Chipcom and IBM as part of the strategic alliance the companies signed in September 1992, are based on Chipcom's PowerRing token-ring technology for ONcore that features per-port retiming, automatic beacon recovery, speed mismatch protection, dual-ring recovery, jitter elimination and intelligent power management.

The highlight of the announcement will be the ONcore Token Ring Port Switching Media Module, a single-slot, 18-port card that supports shielded or unshielded twisted-pair connections. Each port can be assigned via software to any of the 10 token-ring backplanes supported by ONcore, allowing net managers to perform moves, adds and changes without physically visiting the wiring closet or data center.

Other vendors, including Network Systems Corp. and Optical Data Systems, Inc., already offer this type of per-port configuration switching for token-ring environments, and Chipcom provides a similar capability on its Ethernet hub modules.

The company will also roll out the ONcore Token Ring Dual Fiber Repeater Module, a copper-based 10-port token-ring interface module that also has two sets of fiber optic ring-in/ring-out ports that can be used to link an ONcore to another Chipcom hub, to a multistation access unit or to another vendor's hub. This module also supports the per-port configuration switching feature.

The third module, the ONcore Token Ring Passive Media Module, provides 20 ports of unshielded or shielded twisted-pair connections. Ports are assigned to only one token ring in the hub but can be switched en masse to another token ring via software.

To increase the manageability and reliability of these new modules, Chipcom will unveil the ONcore Token Ring Network Monitor Card and Jitter Attenuator Card.

The monitor card attaches to the motherboard of any of the new modules and can be used to manage any module that connected to the same backplane ring. Since the module it is attached to can be switched to any backplane segment, users can employ one monitor card to handle an entire ONcore.

The card compiles network information and then relays that data to the ONcore's Distributed Management Module across a dedicated management bus, keeping management traffic off the hub's main backplanes.

The price of token ring

New token-ring modules for the ONcore hub will be available next month.

Module	Price
Dual Fiber Repeater	$5,995
Jitter Attenuator	$795
Network Monitor	$2,795
Passive Media	$2,995
Port Switching Media	$4,895

GRAPHIC BY TERRI MITCHELL

The jitter attenuator card assures the integrity of token-ring networks by eliminating jitter from signal coming in from existing rings that are particularly noisy or are at extended distances from the hub itself. It can also be attached to any of the new token-ring modules.

©Chipcom: (508) 460-8900.

STANDARDS DEVELOPMENT

Vendor group set to release new document mgmt. API

BY ADAM GAFFIN

Cambridge, Mass.

A group of application and document management system vendors will gather here today to ratify a common application program interface (API) for linking their products.

The Open Document Management Architecture (ODMA) API, to be revealed during a meeting here, will provide users with increased access to documents across an enterprise once vendors start writing to it.

The ODMA API, based on work done by Novell, Inc. subsidiary SoftSolutions Technology, Inc., creates a standard method for end users to check out documents from back-end document libraries and then check them back in once they are done modifying or viewing them. With the API, users will be able to call up documents in applications ranging from spreadsheets to word processors.

"I think it really is a win for end users" because it will enable vendors to create more flexible applications, Jim Bair said.

Currently, vendors have to write custom software to connect specific desktop applications to back-end document storage and retrieval systems.

"I think it is a win for end users" because it will enable vendors to create more flexible applications, said Jim Bair, senior analyst at Gartner Group, Inc., a consulting firm in Stamford, Conn. However, he doubts that users would write to the API themselves, he said.

Vendors throwing their support behind the API include Adobe Systems, Inc., Borland International, Inc., Documentum, Inc., Eastman Kodak Co., Interleaf, Inc., Novell and its WordPerfect and SoftSolutions subsidiaries, Oracle Corp., PC Docs, Inc. and Xerox Corp. Lotus Development Corp. has participated in ODMA meetings, as well.

Their goal is to promote an interface similar to Microsoft Corp.'s Open Database Connectivity (ODBC) specifications for database access, said Jim Meyer, vice president for document management at Interleaf. ODBC lets applications and databases that support it work together.

Although the initial API is intended solely for Windows clients — it will come in the form of Windows Dynamic Link Libraries — Meyer said it could be easily adapted for other platforms. Interleaf is particularly interested in developing a Unix version, he said, and other vendors want to develop a Macintosh edition.

The group expects to test the API over the summer, and a final specification will be released by fall.

Users can expect to see applications that incorporate support for the API within 12 months, Bair said.

Meyer said that, like ODBC, ODMA will mean slower data access than it would with native drivers.

However, he said end users would not really see a performance difference because of the way document management systems typically are used. Rather than trying to access hundreds or thousands of data elements at once, as they would with a traditional database, document management system users typically retrieve only a few documents at a time, Meyer said.

The work on ODMA complements that being done by the Shamrock Coalition, a group of document management vendors and users working on server-based standards for document management.

That coalition, in fact, will meet in Boston this week and will discuss ODMA, among other things. Another issue will be the group's Enterprise Library Services API, whose goal, in part, is to help different document management systems talk to one another.

Shamrock Coalition members will also look at ways of developing an overall set of work flow and document management standards. In addition to ODMA and Shamrock's efforts, the Workflow Management Coalition has been active in trying to create standards, as have Novell and Xerox, which will demonstrate their NetWare-based Document Enabled Networking specs.

Microsoft has not taken part in the ODMA discussions but has not ruled out possible use of the API, either, according to Meyer.

Sprint sues Defense Dept. over DCTN

BY ELLEN MESSMER

Alexandria, Va.

Sprint Corp. last week went to federal court claiming that Department of Defense officials have wasted taxpayers' money and ignored the competitive bidding process by mismanaging the Defense Commercial Telecommunications Network (DCTN).

DCTN, a 10-year contract for voice and data circuits awarded to AT&T in March 1984, has mushroomed to include services beyond its original scope, Sprint asserts. It also maintains that the DCTN contract should have ended this March and that Defense Department efforts to extend it into 1996 are illegal.

A former Defense Department procurement official says the claims made in Sprint's lawsuit — which names Defense Secretary William Perry and Lt. Gen. Alonzo Short Jr. as defendants — have merit.

The DCTN contract originally called for a maximum of 14,000 circuits, but 66,000 circuits had been ordered under it by 1991, said Bill Hecht, now a consultant at The Williams Group in Smithton, Ill.

"Sprint is essentially correct," said Hecht, the original contracting officer for DCTN.

In its lawsuit filed last week at the U.S. District Court in Virginia, Sprint said it has information that shows DCTN had grown to 80,000 circuits.

"This contract was declared military command and control, so no one could know what was going on with it," said Jim Payne, director of marketing at Sprint. "It's supposed to be commercial."

The Defense Department last week declined to comment on the lawsuit. But Harry Carr, company defense communications vice president, called Sprint's and Hecht's characterization of events wholly inaccurate.

The original DCTN contract was for a maximum of 60,000 circuits following an initial installation of a small number of circuits, Carr maintains. "We haven't hit anywhere near that number," he said, although he declined to list the specific tally.

A SECOND OPINION

The Defense Department has sought to extend the DCTN contract for another two years since under its original terms, DCTN did not officially start until the first circuit was purchased, Carr said.

"The first circuit was installed around March 1986 for videoconferencing services for the Army Materiel Command," said Carr, calling the Sprint lawsuit an effort to get DCTN dissolved early. But Hecht claims that the first circuits were ordered about a year after the contract was awarded in March 1984.

Sprint asked the federal court to forbid the Defense Department from using DCTN and permit the DCTN traffic to move to Federal Telecommunications System (FTS) 2000 and other contracts. The Army, Navy and Air Force traffic is assigned to AT&T under FTS 2000, not to Sprint.

But Sprint could ultimately benefit from a court decision pulling down DCTN since the FTS 2000 contract expires in 1998, and plans are being made for its replacement, in which Sprint is certain to compete.

Sprint said the average DCTN rate for switched voice services is about 11 cents per minute, while the comparable rate on FTS 2000 is about 7 cents per minute. The military has begun migrating some traffic from DCTN to the AT&T FTS 2000 net, where AT&T already counts the Army as its single-largest customer.

DCTN has come under fire from members of Congress, in particular Sen. Bob Dole (R-Kan.), who has inquired into DCTN and concluded that the Defense Department is wasting hundreds of millions of dollars each year by not maximizing its use of FTS 2000, which is mandatory for Defense nontactical communications.

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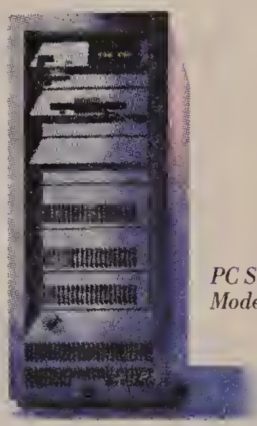
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RBHCs petition Greene's court to lift Consent Decree

BY BILL BURCH

Washington, D.C.

Not content to wait for Congressional relief from the Consent Decree, four of the regional Bell holding companies last week asked U.S. District Court Judge Harold Greene to overturn the decree and let them into manufacturing and long distance.

"The decree has served its purpose," the Bells told Greene. "Now is the time to vacate the decree and return the telecommunications market to regulators and market forces."

But after years of closely supervising the Bells, Greene is unlikely to grant that request, said Richard Wiley, telecommunications attorney and former Federal Communications Commission chairman. Instead, the carriers' best hope for judicial relief may be the appeals court that earlier overruled Greene and let the Bells into information services. This current filing will start the Bells' latest request for relief on its way to that court, Wiley said.

For his part, Greene and his clerks must plow through a mountain of filings, comments and replies from the Bells and their opponents before the judge can rule on the request. Greene's best move could be to wait a few months and see if Congress approves new telecommunications legislation allowing the Bells into long distance and manufacturing, rendering this latest request moot, observers said.

Wading through the waivers

RBHC Consent Decree waiver requests must be submitted to the Justice Department for its opinion, then passed to Judge Greene's court.

Requests pending before Justice Department: 33
Oldest: Pacific Telesis Group, for inter-LATA cellular service, September 1988

Requests pending before Greene's court: 12
Oldest: NYNEX, to provide procurement services for telecommunications products, November 1986

Waivers granted to date: 132
Most recent: NYNEX, to provide cellular and paging services in the Syracuse/Buffalo, N.Y., area, May 1994

SOURCE: JUSTICE DEPARTMENT, WASHINGTON, D.C.
GRAPHIC BY TERRI MITCHELL

The upcoming Senate debate of telecommunications legislation is one of the reasons the Bells filed the request now, according to Jim Blaszak, an attorney representing the Ad Hoc Telecommunciations Users Committee.

The Bells are not confident of what will happen on Capitol Hill and want to be positioned to prosecute their case if they do not get what they want in the Senate, Blaszak said. "This arguably may be contingency planning," Blaszak said. "But it's expensive contingency planning."

The four Bells that filed the request — Bell Atlantic Corp., BellSouth Corp., NYNEX Corp. and Southwestern Bell Corp. — denied giving any thought to politics. "It's not like we wanted to send a message to the legislature by this filing," said Bob Varettoni, a NYNEX spokesman. "This filing was an aggressive legal maneuver that parallels our aggressive legislative tactics."

In the filing, the Bells contend the decree has served its purpose of breaking up the Bell system and establishing the preconditions necessary for competition to emerge. Continued enforcement of the decree is unnecessary because market developments prevent abuse of local facilities, they claim. Finally, the

See RBHCs, *page 63*

INTERNET *tip*

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

FCC files

The FCC maintains a Gopher/ftp site where you can find:

- ✓ **Notices of upcoming hearings**
- ✓ **Copies of orders issued in specific cases**
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- ✓ **Copies of speeches given by FCC officials**

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Circle Reader Service #35

Informix to roll out database tools

BY BARB COLE

Menlo Park, Calif.

Informix Software, Inc. this week will announce an object-oriented tool for building distributed client/server applications.

NewEra 1.0 is designed to let corporate application developers partition applications so they can run across multiple processors on a client, according to the firm. By next year, the partitioning technology will be extended to work across multiple processors on servers, as well, Informix said.

Many of the leading database vendors, including Oracle Corp., are turning to object technology to make writing network applications for their databases easier (see story, this page).

NewEra will debut at the Informix Worldwide User Conference in Tampa, Fla.

"The first generation of client/server tools assumed that all processing took place on [a single client processor]. NewEra lets you write object-oriented applications and move those objects around," said Tony Rodoni, director of product management at Informix.

Developers will be able to manage the objects that make up NewEra applications with a graphical application builder.

NewEra is a successor to Informix's 4GL and 4GL for Windows development tools, and will work with applications developed with them.

The new offering includes a database programming language, visual programming tools, version control and support for object class libraries, reusable application components.

NewEra comes with four class libraries that enable developers to build graphical objects, connect NewEra applications to Informix database servers, connect to Sybase, Inc. SQL Server via Microsoft Corp.'s Open Database Connectivity (ODBC) specification and connect to Oracle Corp. Oracle7 via ODBC.

Also at the conference, Informix is expected to announce relationships with Lotus Development Corp. and other vendors that will provide compatible class libraries for NewEra.

Beta testers said NewEra is similar to the C++ programming language but requires less work to build applications. Early adopters were excited about the object-oriented capabilities.

"This tool lets you create object classes that are independent of the [specific] front-end application" being built, said Gary Gigliardi, president of beta test site FourGen Software, Inc. in Seattle, a maker of accounting software. Such object-oriented capabilities result in faster application development.

Analysts said NewEra will be a significant product for Informix. "One of Informix's greatest strengths has been its fourth-generation language. NewEra provides a migration path for those fourth-generation language customers," said Judith Hurwitz, president of Hurwitz Consulting Group, Inc. of Watertown, Mass.

NewEra will be delivered in three releases during the next year. Version 1.0, shipping now, runs on Windows clients and Unix servers. Pricing was not announced.

In the fourth quarter, Informix will add support for Motif clients and configuration management. A repository class browser and the server application partitioning capabilities will be added in mid-1995.

©Informix: (415) 854-1567.

Oracle readies object-oriented tools

Oracle Corp. is testing a beta version of a new product called Oracle Objects for Windows, a collection of objects that will let C++ programmers build database server functions into applications.

The prewritten objects will make it easy for C++ programmers to write Windows applications that work with Oracle databases across an enterprise network, said Nimish Mehta, vice president of desktop products at Oracle. "We will share our back-end database functionality through C++," Mehta said.

An example of one such function is opening a database. Instead of writing code to open the database, developers could include this function in an application by accessing the appropriate object, he said.

Oracle Object for Windows should be available in the fall and will come with Oracle Glue, a middleware offering. The new software may also include a Visual Basic custom control that Oracle is developing to give Visual Basic developers direct access to Oracle databases.

"We are trying to make it as easy for C++ and Visual Basic developers to write to Oracle databases as it is for them to write to Microsoft's SQL Server," Mehta said.

BY BARB COLE

CyberSpeak: *Voices from the reader network*

Do you, like the House of Representatives, favor letting the Bell companies into the manufacturing, general long-distance and cable TV markets?

◆ "I certainly favor allowing the Bells into other markets. Open competition forces new technological innovations and cost reductions that benefit the industry and the consumer alike. I would be particularly pleased to see any form of competition in the cable TV market."

John Little, senior systems analyst, HFSI, McLean, Va.

◆ "Absolutely. The purpose of the restrictions after divestiture was to prevent the reassembly of the Bell monopoly to allow competition to grow to a viable point. Virtually every commercial break on television now includes at least one advertisement from one of the major long-distance carriers, and radio advertisements are full of commercials for alternative local carriers – hardly a noncompetitive market. Since the purpose of post-divestiture regulations has been served, and the government has fulfilled its obligation to remove barriers to free trade, it's time they removed much of those regulations."

Scott Brickner, senior engineer, QMI, a division of Corometrics Medical Systems, Inc., Annapolis, Md.

◆ "We feel it is imperative to open the local telephone markets to free competition. This will reduce the Internet access provider rates and contribute to the rapid proliferation of improved service locally."

John Horn, Van Tran of Tucson, Inc., Tucson, Ariz.

◆ "I am strongly in favor of letting the Bells into these areas – especially cable TV. The cable TV firms and their little lobbies have had enough time to play with our money and make a mess of a promising technology. It's time to let the pros take over and make things right. The Bells have proven they can handle cellular communications, local telephone communications, and the marketing of telephones and answering machines. Why not let them go the next logical step? If my phone company called me tomorrow and offered me cable TV, I would drop my local cable TV company in a second and sign on with the phone company. Even if the phone company offered fewer channels!"

Denis Perreault, software development manager, MicroSolve Corp., Waltham, Mass.

Next Week
CyberSpeak Out!

How will the proposed Wellfleet/SynOptics merger affect the network industry?

Responses due by 8 p.m. Thursday, July 14. You'll get a T-shirt if we print your response. Please include your name, title, company and address.

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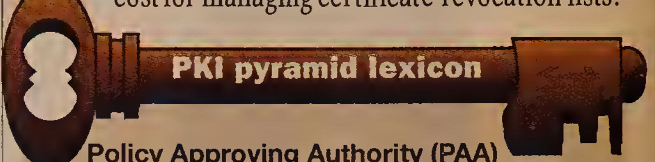
Gov't eyes plans for a public-key infrastructure

BY ELLEN MESSMER

Washington, D.C.

Federal agencies are mulling how to set up procedures and policy guidelines for linking a user's identity to that person's public-key digital signature, but costs and liability issues in certifying users are presenting obstacles.

The U.S. government intends to operate a public-key certification system for government users that will also serve the private sector, as well. But a report just completed by Mitre Corp. for the National Institute of Standards and Technology (NIST) puts the price tag at $1 billion for the start-up of the government alone, with a possible $2 billion annual operational cost for managing certificate-revocation lists.



PKI pyramid lexicon

Policy Approving Authority (PAA)
Creates overall guidelines for the Public Key Infrastructure and may also certify PCA public keys.

Policy Certification Authority (PCA)
Establishes policy for all certification authorities and users within its domain, and approves CA public keys.

Certification Authority (CA)
Certifies public keys for users in a manner consistent with PCA and PAA policies.

Organizational Registration Authority
Acts as an intermediary between a CA and a user to vouch for the identity and affiliation of the user.

GRAPHIC BY SUSAN J. CHAMPENY

Users can sign and verify electronic documents using unique digital signatures based on a secret cryptography key, but security experts have long recognized that a certification system is needed so keys can be revoked if the key is stolen or a person changes jobs.

According to Mitre's report, "The Public Key Infrastructure Study," the role of the Policy Certification Authority (PCA) could be assumed by either the U.S. Postal Service, the Federal Reserve Board, General Services Administration or even private-sector organizations such as telecommunications providers and banks (see graphic).

The Postal Service is eager to step into the role, said sources at NIST, but the high price tag for operating the X.500 directory listing public keys and revocation lists is causing some alarm. The Postal Service declined to comment.

For years, the Internet Society has contemplated setting up the same sort of trusted certificate authority. But it got bogged down almost exclusively because of liability concerns, said Steve Kent, chief scientist at Bolt Beranek and Newman, Inc.

PCAs nevertheless spring up. Trusted Information Systems, Inc., the Massachusetts Institute of Technology and RSA Data Security, Inc. have all set themselves up as PCAs with different policies. Apple Computer, Inc., which now ships RSA digital signatures as part of its operating system, offers a computerized certification request to register public keys with RSA.

But while this type of certification may be fine for use in some commercial purchases, it would not be sufficient at Northern Telecom, Inc. (NTI), which intends to use digital signatures in multimillion-dollar transactions, noted Brian O'Higgins, director of security networks at NTI.

O'Higgins said NTI is testing its own system for

See **Public key**, *page 63*

Lotus and Isocor unlock new messaging gateways

BY ADAM GAFFIN

Several vendors last week announced new or enhanced gateways for building enterprise electronic mail networks by tying together multiple proprietary E-mail systems.

Lotus Development Corp. unveiled an enhanced version of its gateway between cc:Mail and E-mail systems based on Novell, Inc.'s Message Handling Service (MHS).

The DOS-based gateway lets cc:Mail users exchange messages and attachments with users of MHS systems, and includes support for the Standard Messaging Format-71 used by Novell's NetWare Global Messaging 2.0.

In addition, Lotus will now unbundle the gateway software from the company's Router for cc:Mail.

Messaging moves

Infonet:	Announces plans to integrate its Messenger 400 X.400 server with HP's OpenMail messaging software.
Isocor:	Releases X.400-based Isogate for cc:Mail and Microsoft Mail that includes address book synchronization and support for MAPI.
Lotus:	Adds support for newest Novell message formats as well as automatic address translation to cc:Mail Link to MHS.

This will let E-mail administrators better balance network traffic loads by using cc:Mail routers to handle mail between cc:Mail nets while dedicating another machine to handling the exchange of messages between cc:Mail and MHS users, said Dave Maciorowski, vice president of engineering at KWA, Inc., a Littleton, Colo., company using a beta version of the software. Maciorowski's company develops gateways between MHS and E-mail systems for Unisys Corp.'s CTOS operating system.

Also new is an address-table generator that lets cc:Mail and MHS users employ their native addressing formats when messaging each other. The gateway also includes a new set of management tools that let administrators perform such tasks as limiting the size of messages, generating network performance reports and setting times during which the system can be shut down for running backups.

The software also supports cc:Mail tunneling so that two cc:Mail nets can be connected via MHS.

Pricing for the gateway software starts at $695 per server.

ISOCOR'S OFFERING

Isocor, based in Los Angeles, has delivered its own set of gateways for cc:Mail users, only its offerings are aimed at increasing connectivity between cc:Mail and Microsoft Corp. Microsoft Mail users across an X.400 backbone.

The company's Isogate software lets cc:Mail and Microsoft Mail users exchange messages and files with one another and synchronize directories. The software provides similar connectivity to users of Isocor's own MAPIWare E-mail clients, which are based on Microsoft's Messaging Application Programming Interface.

It also incorporates an attachment tagging function in which users can note the type of file they are attaching to a message. The recipient's computer can then use this information to call up the proper application or viewer for manipulating or examining the file.

Jim Brandenburg, president of consultancy Messaging Concepts in Houston, is evaluating Isogate as well as Isocor's Isoplex messaging server on behalf of a large client looking to replace a Retix gateway.

To date, Isocor's software has worked reliably, and the directory synchronization has been easy to use, he said.

Pricing for a typical gateway installation starts at approximately $9,000, which includes the cost of required Isoplex messaging server software. The software requires a server running The Santa Cruz Operation, Inc.'s SCO Unix.

Isocor teamed with Boston Software Works, Inc. to develop the gateways.

INFONET AND HP

In other E-mail industry news, Infonet Software Solutions, Inc. (formerly OSIware) of Burnaby, British Columbia, said it is working with Hewlett-Packard Co. to integrate the two companies' messaging products.

The firms will combine Infonet's Messenger 400 X.400 server software with HP's OpenMail messaging clients. They did not specify when this will be completed.

They will also port Messenger 400 to HP's HP 9000 Series 800 Unix platform by year end.

©Lotus: (415) 335-6400; Isocor: (310) 476-2671; Infonet: (604) 436-2922.

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THE LONG AND THE SHORT OF CHOOSING A ROUTER AS TOLD BY FIRST OF AMERICA.

THE SHORT OF CHOOSING A ROUTER AS TOLD BY PROTEON.

BOB FISHER is the Systems Analyst at First of America Services, Michigan.

"Primarily, we evaluated four routers — Cisco, Wellfleet, CrossCom, and Proteon — for SNA internetworking, IPX and IP capabilities.

"When it came to hardware configuration, Proteon provided extremely easy access. You could pop the cover off and readily change interfaces without having to string a bunch of cables. They provided flash memory for the operating system and configurations, so there was never any booting off a diskette. The LEDs on the front panel were also very nice. A quick look would tell you whether a given interface was up or not. None of the other router vendors provided that. In terms of speed and efficiency, Proteon beat the others hands down. And as far as the overall support for different topologies, Proteon worked well with everything. Unlike other brands we tested, the Proteon router was a true gateway.

"Reliability was another major criteria for selecting First of America's new router. You see, if we can't service our customers, we're out of business. Our network ties together six hundred bank branches. These terminals simply can't go down. So choosing a router to carry this traffic wasn't a decision I took lightly. Proteon proved to have the reliability we need. And if any questions did arise, Proteon's support representatives were readily available and very knowledgeable.

"Our bank is in acquisition mode, so integration is critical. After any merger, we have to integrate new networks into ours while migrating their applications. Right off the bat, our routers have to support all kinds of topologies. By deploying the Proteon DNX router at regional sites, we were able to provide these locations with SNA support very quickly.

"In terms of overall technology and performance, I'd have to say the Proteon router is absolutely the best."

" No contest."

" Our router is incredibly easy to use."

" Proteon's reliability is second to none."

" We'll integrate any multiprotocol network."

" Amen."

proteon

For more details on the First of America story and our free Guide to Integrating SNA and Multiprotocol Networks, call 1-800-830-1300.

Circle Reader Service #36

Dept. 201

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NETWORK WORLD
The Newsweekly of Enterprise Network Computing

Mailing Address: (If different from company address)
Address1 ____________________
Address2 ____________________
City ____________________State______ ZIP________

1 Industry: (check one only)

01. ☐ Manufacturers (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Healthcare Services
05. ☐ Hospitality/Entertainment/ Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/ Agriculture/Forestry)
12. ☐ Government Federal/State/Local
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consultants (Independent)
16. ☐ Carriers/Interconnects
17. ☐ Manufacturers (Computer/ Communications)
18. ☐ Systems/Network Integraters (VAR/VAD/ VAN/Systems/Software Houses)
19. ☐ Distributors Communications/ Computers
20. ☐ Other____________

2 What is your Job Function? (check one only)

NETWORK IS Management:

1. ☐ Networking Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS,IT,MIS,Systems Management
5. ☐ Engineering Management
6. ☐ Corporate Management(CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
7. ☐ Consultant (Independent)
8. ☐ Other____________

3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 59 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1
7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)
1. ☐ Corporatewide
2. ☐ Multienterprise
3. ☐ Departmental
4. ☐ None

B. INVOLVEMENT (check all that apply)
1. ☐ Recommend/Specify
2. ☐ Approve
3. ☐ Evaluate
4. ☐ Determine the need
5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services.
B: I plan to purchase the following products/services.

A B LOCAL AREA NETWORKS
☐ 01. ☐ Local Area Networks
☐ 02. ☐ Network Operating Systems Software (NOS)
☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
☐ 04. ☐ LAN Backup Systems (optical, tape, disk, etc.)
☐ 05. ☐ Network Test Equipment/Diagnostic/ Management Software
☐ 06. ☐ Hubs/Intelligent Hubs
☐ 07. ☐ Cables, Connectors, Baluns
☐ 08. ☐ UPS
☐ 09. ☐ Network Adapter Boards/Network Interface Cards
☐ 10. ☐ Peer-to-Peer LANs
☐ 11. ☐ Wireless Networks
☐ 12. ☐ SNMP Network Management
☐ 13. ☐ ATM Switches
☐ 14. ☐ Remote LAN Access
☐ 15. ☐ Ethernet Switches
☐ 16. ☐ LAN Servers
☐ 17. ☐ Superservers
☐ 18. ☐ Remote Access/Communications Servers

A B REMOTE/WIRELESS COMPUTING
☐ 19. ☐ Laptops
☐ 20. ☐ Notebooks
☐ 21. ☐ PDAs
☐ 22. ☐ PCMCIA
☐ 23. ☐ Mobile Data Services
☐ 24. ☐ Wireless Data Services
☐ 25. ☐ Wireless Data Equipment

A B INTERNETWORKING
☐ 26. ☐ Bridges
☐ 27. ☐ Routers
☐ 28. ☐ Gateways
☐ 29. ☐ Bridge/Routers

A B COMPUTERS/PERIPHERALS
☐ 30. ☐ Micros/PCs
☐ 31. ☐ Minis
☐ 32. ☐ Mainframes
☐ 33. ☐ Workstations
☐ 34. ☐ Front-End Processors
☐ 35. ☐ Terminals
☐ 36. ☐ Printers
☐ 37. ☐ Cluster Controllers
☐ 38. ☐ Fax Machines
☐ 39. ☐ Monitors

A B SOFTWARE/APPLICATIONS
☐ 40. ☐ Network Management
☐ 41. ☐ Systems Management
☐ 42. ☐ Micro to Mainframe
☐ 43. ☐ Security
☐ 44. ☐ Communication/Terminal Emulation
☐ 45. ☐ Word Processing
☐ 46. ☐ Operating Systems
☐ 47. ☐ Client Server Applications Development

A B SOFTWARE/APPLICATIONS (cont'd)
☐ 48. ☐ Applications Development
☐ 49. ☐ Data Base Management/RDBMS
☐ 50. ☐ Spreadsheet
☐ 51. ☐ Groupware
☐ 52. ☐ EDI
☐ 53. ☐ E-Mail
☐ 54. ☐ Windows/Graphical User Interface
☐ 55. ☐ 4GL Development/Case
☐ 56. ☐ Multimedia
☐ 57. ☐ Graphics/DTP
☐ 58. ☐ Remote Access
☐ 59. ☐ Imaging
☐ 60. ☐ Suites
☐ 61. ☐ Middleware
☐ 62. ☐ Document Management

A B WIDE AREA NETWORKS EQUIPMENT & SERVICES
☐ 63. ☐ Modems (9.6K bps and over)
☐ 64. ☐ Modems (under 9.6K bps)
☐ 65. ☐ T-1/T-3 Multiplexers
☐ 66. ☐ T-1/T-3 Services
☐ 67. ☐ Inverse Multiplexers
☐ 68. ☐ Fractional T-1
☐ 69. ☐ SMDS
☐ 70. ☐ ATM (Asynchronous Transfer Mode)
☐ 71. ☐ Matrix Switches
☐ 72. ☐ Packet Switches
☐ 73. ☐ Protocol Converters
☐ 74. ☐ Diagnostic/Test Equipment
☐ 75. ☐ DSU/CSU
☐ 76. ☐ Microwave
☐ 77. ☐ Fax Boards/Modems
☐ 78. ☐ VSAT
☐ 79. ☐ Fiber Optic
☐ 80. ☐ Satellite
☐ 81. ☐ ISDN
☐ 82. ☐ PBXs (over 1000 lines)
☐ 83. ☐ PBXs (under 1000 lines)
☐ 84. ☐ Automatic Call Distributors
☐ 85. ☐ Voice Messaging Systems
☐ 86. ☐ Videoconferencing/Teleconferencing
☐ 87. ☐ Voice Response/Processing
☐ 88. ☐ Dedicated Leased Line
☐ 89. ☐ Switched Data
☐ 90. ☐ E-Mail/Online Services
☐ 91. ☐ Image Processing
☐ 92. ☐ 800/900 Services
☐ 93. ☐ WATS/MTS
☐ 94. ☐ International
☐ 95. ☐ Virtual Networks
☐ 96. ☐ Frame Relay
☐ 97. ☐ Value Added Services
☐ 98. ☐ CIT (Computer-Integrated Telephony)

☐ 99. ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

Entire Organization:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

7 Which of the following network platforms are currently installed/planned? (check all that apply)

Installed Planned
A B

NETWORK ARCHITECTURES
☐ 01. ☐ SNA
☐ 02. ☐ DECNET
☐ 03. ☐ MAP/TOP
☐ 04. ☐ TCP/IP
☐ 05. ☐ DCA (Unisys)
☐ 06. ☐ X.25
☐ 07. ☐ Novell IPX/SPX
☐ 08. ☐ APPC/APPN/LU6.2
☐ 09. ☐ NETBIOS
☐ 10. ☐ OSI
☐ 11. ☐ APPLETALK
☐ 12. ☐ NSF
☐ 13. ☐ XNS
☐ 14. ☐ OTHER____________

NETWORK OPERATING SYSTEM
☐ 15. ☐ LOCALTALK (APPLETALK)
☐ 16 ☐ BANYAN (VINES)
☐ 17. ☐ DCA (IRMALAN)
☐ 18. ☐ DCA (10-NET)
☐ 19. ☐ IBM (LAN SERVER)
☐ 20. ☐ IBM (PC LAN PROGRAM)
☐ 21. ☐ MICROSOFT (LAN MANAGER)
☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
☐ 23. ☐ PROTEON (PRONET)
☐ 24. ☐ 3COM (3+, 3+OPEN)
☐ 25. ☐ ARTISOFT (LANTASTIC)
☐ 26. ☐ HAYES (LANSTEP)
☐ 27. ☐ DEC (PATHWORKS)
☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
☐ 29. ☐ OTHER____________

nstalled Planned
A B

LAN ENVIRONMENT
☐ 30. ☐ 4M TOKEN RING
☐ 31. ☐ 16M TOKEN RING
☐ 32. ☐ ARCNET
☐ 33. ☐ ETHERNET
☐ 34. ☐ 100 M ETHERNET
☐ 35. ☐ STARLAN
☐ 36. ☐ FDDI
☐ 37. ☐ LOCAL TALK
☐ 38. ☐ 10BASE-T
☐ 39. ☐ ATM
☐ 40. ☐ OTHER____________

COMPUTER OPERATING SYSTEM
☐ 41. ☐ DOS
☐ 42. ☐ UNIX/XENIX/AIX
☐ 43. ☐ OS/2
☐ 44. ☐ OS/2.X
☐ 45. ☐ IBM MVS
☐ 46. ☐ IBM VM
☐ 47. ☐ DIGITAL VMS
☐ 48. ☐ MACINTOSH
☐ 49. ☐ WINDOWS
☐ 50. ☐ WINDOWS NT
☐ 51. ☐ X WINDOWS
☐ 52. ☐ SOLARIS
☐ 53. ☐ OTHER____________

☐ 54. ☐ NONE OF THE ABOVE (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis			Mainframes		Minis	
	Installed	Planned	Installed	Planned		Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐	06. DATA GENERAL	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐	07. HP	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐	08. TANDEM	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐	09. UNISYS	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐	10. OTHER________	☐	☐	☐	☐

Which of the following do you have installed/planned: (USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/Nodes	Servers	Clients/Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million and over
02. ☐ $50 - $99.9 million
03. ☐ $25 - $49.9 million
04. ☐ $20 - $24.9 million
05. ☐ $10 - $19.9 million
06. ☐ $5 - $9.9 million
07. ☐ $1 - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $499,999 or less
10. ☐ NONE OF THE ABOVE

11 Estimated gross annual revenues of your entire company/institution: (check one only)

1. ☐ Over $10 billion
2. ☐ $1 to $9.9 billion
3. ☐ $500 to $99.9 million
4. ☐ $100 to $499.9 million
5. ☐ $50 to $99.9 million
6. ☐ $10 to $49.9 million
7. ☐ $5 to $9.9 million
8. ☐ $4.9 million or less
9. ☐ NONE OF THE ABOVE

12 Estimated number of employees for your entire corporation: (check one only)

1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4 ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

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ENTERPRISE INTERNETS

Data Network Architectures, Standards, Equipment and Management

Digital continues to enhance DECnet/OSI; future unclear

Adds ships-in-night routing, performance extensions.

BY JIM DUFFY

Littleton, Mass.

As users await word on details of Digital Equipment Corp.'s reorganization and product-line divestiture, company engineers continue to work on enhancements to DECnet/OSI.

Over the next year, Digital will add a number of extensions to DECnet/OSI in order to make it more like DECnet Phase IV and better able to accommodate Transmission Control Protocol/Internet Protocol and other transports.

On tap for later this year is an enhancement for DECnet/OSI end systems called Segregated and Integrated Routing, or SINNERS. SINNERS is an algorithm that lets DECnet/OSI end systems choose whether to pass packets through a DECnet/OSI router, which uses Integrated Intermediate System-to-Intermediate System routing, or a Phase IV router, which is based on a distance vector algorithm.

If there is a DECnet/OSI router in a network today, the DECnet/OSI end system automatically assumes that is the designated router and sends its packets accordingly.

But with users stitching together networks of different topologies, protocols and routing algorithms, sending packets in a single fashion is not always practical.

''The topologies that have grown up aren't necessarily amenable to that kind of default,'' said Judy Cross, DECnet/OSI product manager. ''Sending something automatically to a [DECnet/OSI] router doesn't always guarantee that the packet will end up at the destination Phase IV node.''

Besides obviating the need to use only DECnet/OSI routers, SINNERS will also provide better support for third-party DECnet routers from firms such as Cisco Systems, Inc. and 3Com Corp., which support ships-in-the-night routing as well as Integrated Routing.

Digital will unveil SINNERS by the end of the year, said Mary Ellen Fortier, DECnet/OSI marketing manager.

Upcoming DECnet/OSI enhancements

- **Segregated or Integrated Routing** – Allows DECnet/OSI end system to choose DECnet/OSI or non-DECnet/OSI router for transport.
- **Reverse Path Caching** – End systems determine routes based on receipt of packet.
- **"DECnet/IP"** – Allows for access to DECnet applications via IP.
- **Support for large frame sizes** – Better performance for bridged FDDI and Ethernet LANs.

TRACING PACKETS

Also in the works for DECnet/OSI is a feature called Reverse Path Caching. This capability, which is currently supported in DECnet Phase IV, will allow DECnet/OSI end systems to trace the path of an incoming packet back to the sending end node instead of requesting path information from its designated router, as is necessary today.

This feature will alleviate time-outs caused by flushing caches, said Bill Duane, a Digital technical officer. When end systems request path information from routers, they store that information in cache memory. Periodically, routers will instruct end systems to invalidate, or flush, that information because the path has changed.

With Reverse Path Caching, end systems will never receive those instructions from their routers.

''If you have a complex network environment with a lot of connections between a lot of hosts with routers in between, you don't want [end systems] constantly going back to the router to ask for directions to their destination node'' after its cache is flushed, said Matt Holdrege, senior network specialist at PacifiCare Health Systems, Inc. in Cypress, Calif. ''If they can cache that information [from packets received], it's going to improve on efficiency and reduce the overall bandwidth needed.''

Digital also fleshed out some of the TCP/IP support coming for DECnet/OSI (*NW*, May 16, page 1).

The company is developing an interface, similar to the Request For Comment 1006 interface for accessing OSI applications using TCP/IP protocols, to let users access DECnet applications over TCP/IP.

The interface, which Duane referred to as DECnet/IP, will be included in future licenses of DECnet/OSI. Currently, users cannot access DECnet applications via TCP/IP.

Lastly, Digital said DECnet/OSI will support large frame sizes, such as 4,500-byte Fiber Distributed Data Interface frames. Currently, DECnet/OSI users incur performance spikes when bridging Ethernet and FDDI networks because 4,500-byte FDDI frames cannot be converted to 1,500-byte Ethernet frames, Duane said.

But DECnet/OSI will soon be able to read a bit in the media access control header of a frame to determine if it's on an FDDI ring or off of it, and adjust the frame size accordingly, he said.

©Digital: (800) 344-4825.

BRIEFS

IBM last week announced the **5250 Emulation Family Solution Pac** series, an integrated hardware/software package for connecting personal computers to Application System/400 mid-range computers. IBM is offering 30 5250 Solution Pacs, which include everything from the PC adapter to cable and software.

Different packages offer products that support Industry Standard Architecture (ISA), Extended ISA, MicroChannel and PCMCIA adapters, twinaxial, shielded and unshielded twisted-pair wiring, and DOS, Windows and OS/2 operating systems. The packages are meant to be a one-stop shop that makes it easy for users to buy a total 5250 emulation package.

Packages are available for prices ranging from $359 to $649 per PC.

IBM: (800) 426-4329. (Ask for Document 1943.)

Informer Data Security, Inc. last week announced that its Secure Access Management software now supports the **V.34 modem** standard for dial-up remote access at data rates up to 230K bit/sec.

Informer: (714) 379-4480.

Clarify, Inc. has unveiled its next-generation automated customer service system for **help desk** environments that features faster problem resolution and customization enhancements.

Version 3.0 of the Clarify Customer Management System (CSM) features improvements in the product's ability to create and manage information in its knowledge base. One of these enhancements is an integrated full text search capability that searches existing product documentation, technical notes, specifications and CD-ROM databases for routine question and answer situations.

CSM 3.0 is priced from $1,000 to $5,000. It is available 30 days after receipt of order.

Clarify: (408) 428-2000.

APPN group moves technology closer to reality

BY MICHAEL COONEY

Raleigh, N.C.

IBM and its third-party backers are moving closer to ratifying a set of Advanced Peer-to-Peer Networking (APPN) implementation agreements that should bring improved performance and routing capabilities to APPN products by late this year or early next year.

At its recent meeting, the APPN Implementors Workshop (AIW) fully approved the dependent LU Requestor (dLUR) specification, which defines how 3270 devices can participate in APPN nets. And the group is now one step away from approving its High Performance Routing spec, which represents the next generation of APPN routing.

Even the contentious Data Link Switching (DLSw) group made progress in moving the technology toward further implementations. The group is made up of vendors that have done virtually nothing but squabble over DLSw implementation details for almost a year (*NW*, May 30, page 1).

"Peace definitely broke out," observed Robin Layland, principal with Layland Consulting in West Hartford, Conn.

On the APPN front, the AIW moved the HPR specification to ''approved direction'' status, meaning most of the technology has been defined, and vendors are now working to give it ''closed pages'' status, or fully approve it.

HPR promises to enhance APPN performance, eliminate nagging deficiencies such as the ability to dynamically reroute around failures, and improve data flow control and class-of-service features.

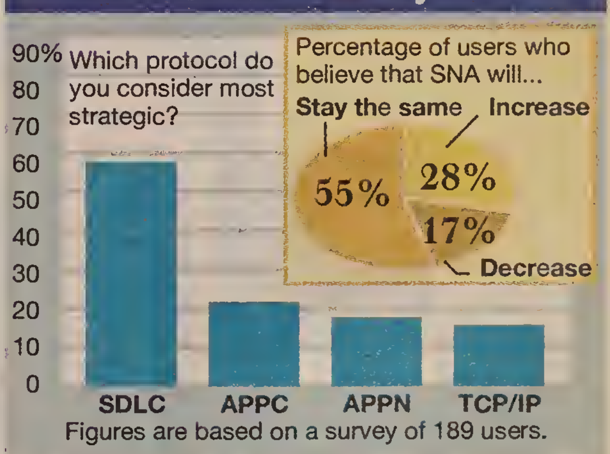
IBM at one point last year said it expected to have HPR implemented by the end of this year in major products such as the 3174 Establishment Controller, Communications Manager/2, VTAM, Network Control Program, the 6611 multiprotocol router, 3172 Interconnect Controller and the Application System/400 — but it appears that will not happen until 1995.

''We are following the AIW's lead on HPR development, and we don't expect to see it approved by the AIW until later this year,'' said Marcia Peters, IBM's APPN lead architect.

HPR is considered by most industry observers to be the key ingredient to APPN's success because it eliminates its main drawbacks as compared to the chief competing technology, TCP/IP.

''IBM had a much more aggressive plan in place, but it is taking the approach now to wait for other vendors,'' according to Tom Nolle, president of the CIMI Corp. consultancy in Voorhees, N.J.

Protocol survey



Figures are based on a survey of 189 users.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: CIMI, VOORHEES, N.J.

As for the dLUR technology, it reached closed pages status, so it is now defined well enough that vendors can begin implementing standardized versions of it anytime. IBM has already announced dLUR support for the 3174, OS/2 and VTAM.

Data Connection, Ltd., a Systems Network

See APPN, *page 16*

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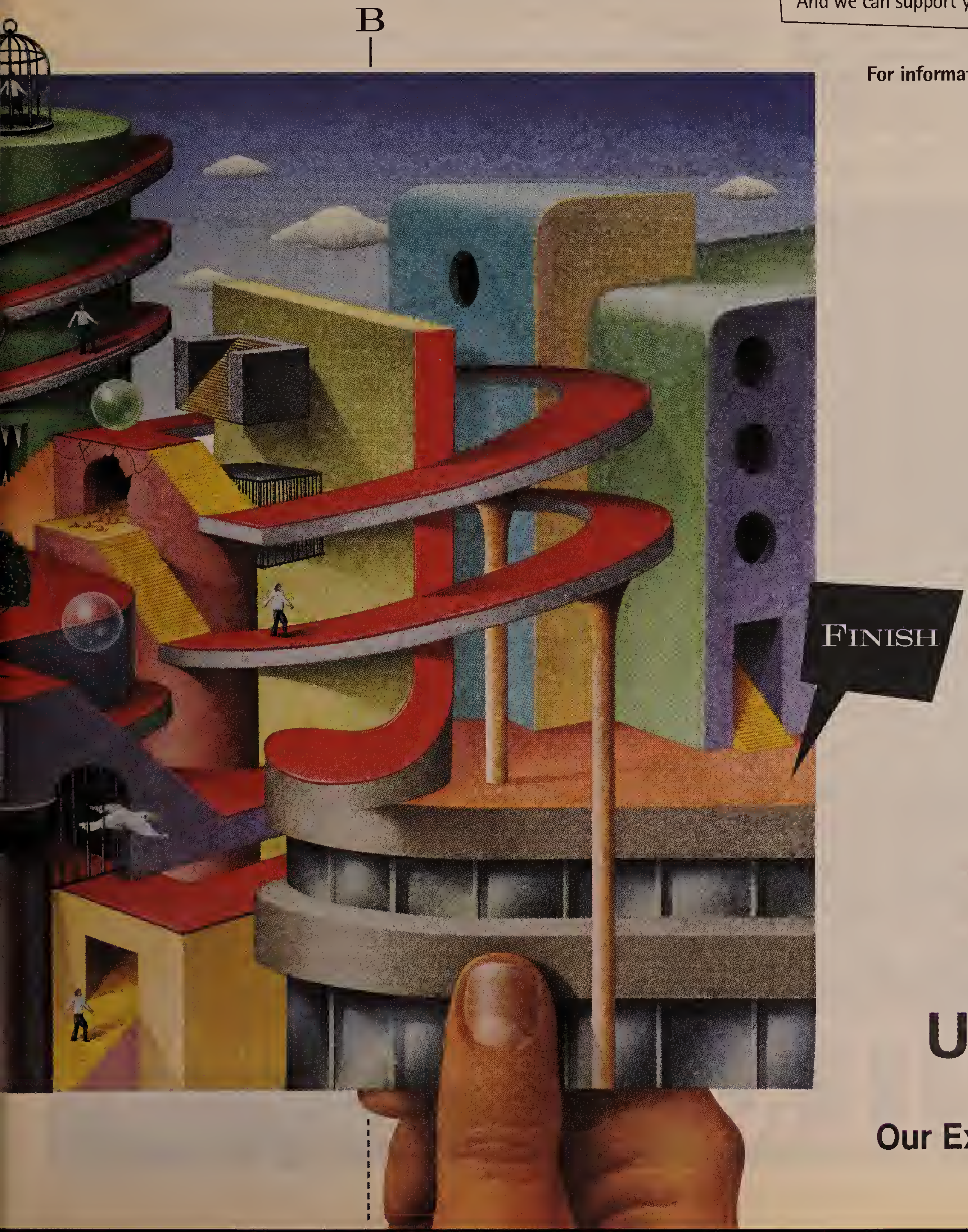

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INTERNETWORKING MONITOR

by Scott Bradner

What is wrong with SNMP?

Every now and then, you hear people dumping on the Simple Network Management Protocol. Among the complaints are that it is not smart enough, the graphics are not good enough, there is not enough detail in the network representation, it lacks security (or that its security is too complicated), you can't manage your air conditioner with it, and on and on.

When thinking about SNMP, the first thing to do is separate the technology-related issues from implementation issues.

SNMP itself is quite simple. It is a small set of messages that can be exchanged between a net management station and an SNMP-compliant agent in some net device.

The agent maintains a database of information — called a Management Information Base (MIB) — about the configuration and status of the device. The messages are commands to retrieve data from entries in the MIB or to set the entry to a new value.

In SNMP Version 2 (SNMPv2) there are three data retrieval request messages: get data from one or more entries, get a block of data, or get data from the syntactically "next" entry.

There is a "set" request message that can be used to change the contents of one or more database entries and a response message that the agent uses to respond to any of the retrieval or set messages.

Also included is a message for management station-to-management station communication and a "trap" message that an agent can send to a management station when something particularly significant happens.

As you can see, SNMP is quite simple and doesn't include anything about pretty pictures of nets. It is a way to ask questions and convey information. The interpretation and representation of that information is a matter of implementation in the management station.

If a management station can't show a hierarchical representation of the network, that is a result of a lack of capability in the implementor. If it tells the operator that the 100 nodes on the LAN at the far end of a wide-area link have gone away rather than letting you know that the link went south, the implementor is demonstrating a lack of understanding of cause and effect. Don't blame SNMP.

There are some things that one can legitimately criticize in SNMP, however.

The level of security in SNMPv1 was nothing to write home to mother about, unless mother cares as little about network security as most network managers seem to.

A clear-text access control string, known as a community name, is carried in each SNMP message. Anyone who could monitor your network could capture the community name and then, in most cases, have the same level of monitoring and control that legitimate network operations people have.

SNMPv2, on the other had, has a comprehensive security package, but ithas been criticized as too complicated. But a new document, RFC 1503, now describes clearly and simply how to administer SNMPv2.

The amount of SNMP traffic in a net is a product of the query pattern configured into the management station. If you want to know the status of every router in a thousand-router net every second, you'll have a lot of traffic.

But if you are a bit sensible in your expectations, the amount of SNMP traffic can be kept to a quite reasonable level.

While finding an air conditioner MIB might be a bit tough, more than 40 MIBs have been defined covering a wide range of applications from protocols to servers and routers to printers — with more in the works.

So take care in complaining about SNMP and shoot at the right target. More often than not, it is the name on the box, not the protocol in the standard.

Disclaimer: Harvard has dozens of ideas about management, this is not one of them.

➾ Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu.

APPN

Continued from page 13

Architecture software vendor in England, has also announced its SNAP-APPN software will support dLUR almost immediately. Data Connection is the only supplier of APPN code other than IBM. Vendors such as Wellfleet Communications, Inc. Northern Telecom, Inc. and Hewlett-Packard Co. license SNAP-APPN from Data Connection.

DLSW STAYS HOME

As expected, the group also formally decided to keep development of the DLSw specification within the AIW and not to give it to the Internet Engineering Task Force (IETF), which some favored (*NW,* June 6, page 2).

DLSw is IBM's technology for sending SNA and Network Basic I/O System traffic over Transmission Control Protocol/Internet Protocol backbones. The IETF has also designated DLSw as Request For Comment 1434, with the idea that it will become an industry standard.

"The bottom line was that if we had sent DLSw to the IETF, we would have delayed implementations nine to 12 months — and we didn't want to do that," said Louise Wells, director of SNA internetworking with the Internet Technical Institute in Milpitas, Calif., and chairman of the DLSw group.

This means users could see standardized DLSw implementations by the end of the year. In the effort to speed DLSw along, however, some advanced features, such as prioritization, will not be available in a standardized form until the second AIW iteration of DLSw. ◪

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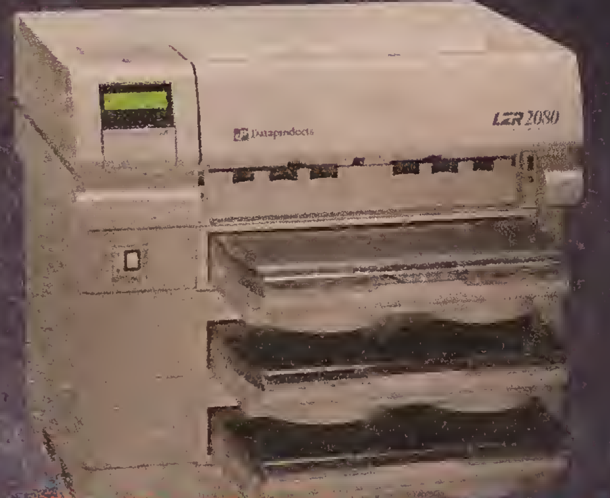

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Circle Reader Service #32

Calculating net usage is key to videoconferencing success

BY ELLEN MESSMER

Washington, D.C.

Videoconferencing is often billed as technology that can save money by reducing travel costs, but unless users carefully estimate usage and plan accordingly, service costs can spiral out of control.

Users have to assess the amount of time videoconferencing will be used and whether it will be employed only within the company or if it will extend to outside business partners in order to choose the proper mix of public and private network services.

"The first thing you need to look at is the business justification," said Todd Dagres, vice president at brokerage firm The Robinson-Humphrey Company, Inc.

More and more, users want to be able to set up videoconferences with business partners and customers, so access to the public network may be needed in addition to high-bandwidth private links.

According to some in industry, organizations that use their videoconferencing systems for fewer than three hours per day between each site should probably choose switched services such as Basic Rate Interface (BRI), Integrated Services Digital Network or switched digital services, which charge on a per-call basis.

"But if it's more [than three hours], then you should probably go to dedicated lines or take advantage of term discounts with virtual private networks," said Roderick Randall, vice president of marketing and business development at hub and multiplexer manufacturer Teleos Communications, Inc. in Eatontown, N.J.

Bob Fischer, in charge of Apple Computer, Inc.'s 19-site network of videoconferencing room systems, agreed with the rule-of-thumb calculations put together by Teleos. "We did the calculations, but you've got to assume your network usage will grow," he said.

Apple uses Sprint Corp. Virtual Private Network (VPN) Switched Data Services to link its own corporate videoconferencing sites. The VPN can connect to other carrier networks through a Teleos Video Hub at Apple's Cupertino, Calif., headquarters.

"If Apple's Austin [Texas] office wants to call England, the videoconferencing call is sent through Sprint's VPN to the Cupertino Video Hub, where the translation to the AT&T network is made and the call is shipped to the U.K.," Fischer said.

To reach its customers and suppliers, however, Apple uses AT&T's dial-up ISDN service and bypasses the local exchange carrier (LEC) by means of a dedicated T-1 line.

All of Apple's recent operating system negotiations with IBM were conducted via videoconference, Fischer noted.

The need for intercompany videoconferencing has become important enough that Apple last month upgraded its proprietary Compression Labs, Inc. Rembrandt II systems to a standards-based version of the product for interoperability across vendor lines.

"If you venture into the shark-infested waters of international videoconferencing, you'll see a phenomenal jump in costs."

-Roderick Randall

For companies venturing into desktop videoconferencing, Teleos offers another rule of thumb.

"It's cheaper to buy BRI ISDN access from the LEC than direct T-1 access to the long-distance carrier if the company's site has less than eight users making use of desktop videoconferencing for one hour each per day," Randall said.

Failing to accurately gauge usage could mean several thousand dollars in unnecessary costs each month since the LEC charges on a per-usage basis for switched access, he said. ☒

Video nets help doctors serve remote areas

Obstacles still exist that threaten to keep telemedicine an obscure specialty.

BY ELLEN MESSMER

Kansas City, Kan.

Telemedicine, the practice of using videoconferencing to assist in the treatment of patients, is proving its value in rural clinics around the country, but physicians warn that obstacles remain to its widespread acceptance.

Doctors are finding that they can count on the quality of both interactive and store-and-forward videoconferencing for real-time visual examination of a patient or a look at static images such as X-rays. But a host of problems, such as turf battles at hospitals over patients and the lack of insurance reimbursement for network costs, threaten to keep telemedicine an obscure specialty.

Dr. Ace Allen, a medical oncologist at the cancer center of the University of Kansas, frequently had to visit rural parts of the state with other specialists in a small plane to see patients who were at risk for cancer. Each trip cost $1,000 and many hours of unproductive time.

But the university's videoconferencing network has changed all that. The net, based on Compression Labs, Inc.'s Rembrandt coder/decoders installed at 28 medical sites connected over the state's T-1 backbone, lets Allen consult from here with physicians and their patients in remote towns.

A host of medical equipment, such as electrocardiogram machines, can be adapted to send images over videoconferencing networks. One device, a special stethoscope called a telestethoscope, lets doctors listen to a patient's heartbeat remotely.

"In some ways, the telestethoscope is better," Allen said.

"Our telemedicine network was conceived by a pediatrician, Bob Cox," he added. "This is important because so much in videoconferencing is not driven by the end users; it's driven by the vendors."

Currently, there are only about a dozen telemedicine projects in the U.S., noted Allen, who publishes a newsletter called "Telemedicine Today" in his spare time (see graphic). And the lack of reimbursement for video could slow its continued acceptance, he said.

In most states, Blue Cross/Blue Shield reimburses physicians fully for interactive video, generally at the established rate of $35 per hour. But the Health Care Finance Administration, the Washington, D.C. agency that sets national policy on government benefits such as Medicare and Medicaid, will not reimburse people for network costs.

Another issue is that in spite of its apparent benefit to patients in remote areas, videoconferencing technology has led to unexpected conflicts between rural and urban hospitals. "There's the sense of infringement on territory, that city doctors would take away the better-paying patients and leave the Medicare patients to the rural doctors," Allen acknowledged.

In the coming years, telemedicine may bring better care and further democratization of access to patients and physicians. Or it may lead to "a wrangling ground for competing medical care hegemonies, a weapon for hospitals, HMOs, governments or regions to use in carving out their own markets," he warned. ☒

The top 10 North American Telemedicine programs

Program	Number of consultations	Average length of consultation
Texas Telemedicine Project	1,000	3-5 minutes
East Carolina University School of Medicine	200	30 minutes
University of Kansas	180	Psychiatry: 1 hour; Other: 35 minutes
Medical College of Georgia	115	35 minutes
Tripler Army Medical Center in Hawaii	89	20 minutes
Texas Technical University	57	35 minutes
University of Calgary	35	Not available
Eastern Montana Telemedicine Project	31	Psychiatry: 1 hour; Other: 20 minutes
Mayo Clinic	25	45 minutes
West Virgina University	18	25 minutes

SOURCE: "TELEMEDICINE TODAY," SHAWNEE MISSION, KAN.

TRAFFIC CONTROL

GDC boosts ATM line with release of new switch

BY MICHAEL COONEY

Middlebury, Conn.

General DataComm, Inc. (GDC) has announced a low-end ATM feeder switch and new traffic control software that together promise to help users build scalable Asynchronous Transfer Mode (ATM)-based networks.

The new switch, the APEX-Multimedia Access Concentrator (MAC) is designed for small office users who want to converge local-area network, voice and video onto a high-speed ATM backbone. Meanwhile, the new software for GDC's ATM switch line will help users control traffic flows and manage the ATM environment more efficiently.

"The APEX-MAC will let users in small workgroups communicate with each other across the enterprise without geographic or bandwidth limitations," said Jonathan Reeves, executive director of GDC's ATM strategy.

"The APEX-MAC will let users in small workgroups communicate with each other across the enterprise without geographic or bandwidth limitations."

The APEX-MAC is an eight-slot ATM switch with a 1.4G bit/sec switching capacity. The slots can support as many as 28 ports configured for Ethernet LAN segments or a variety of ATM, voice, frame relay and other communications interfaces. The box supports a single wide-area connection at speeds up to Optical Carrier-3, or roughly 150M bit/sec.

According to Reeves, the box can be connected to GDC's larger APEX-DV2 ATM backbone switch or public ATM services. The APEX-DV2 backbone switch has a capacity of 6.4G bit/sec and a total of 64 ports. GDC sells another switch, the APEX-NPX, to carriers.

The entire APEX switch family will now run new control software that adds support for the ATM Forum's User Network Interface, switched virtual circuits (SVC), traffic congestion control and prioritization.

SVC support lets APEX switches establish more casual connections between users, analogous to dial-up lines, as compared to static permanent virtual circuits. Carriers can use the feature to offer a switched ATM service, and users can employ it between sites that need only occasional communications.

The new priority and congestion control lets users define which data should be dropped first in the event of a congestion problem.

"We will be able to gracefully degrade lower priority traffic, like low-speed data, and keep high-priority traffic like video moving," according to Reeves. "In the past, we had limited control over traffic flow, but we couldn't prioritize or regulate traffic flow very well."

The APEX-MAC will be available in the third quarter for prices starting at $20,000.

The new software will ship with APEX switches this month. Existing users will get the software free of charge.

©GDC: (203) 574-1118.

Comments?

See "Contacts" box on page 2.

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SynOptics/Wellfleet mega-merger sparks industrywide debate

BY SKIP MACASKILL

Waltham, Mass.

The blockbuster merger of SynOptics Communications, Inc. and Wellfleet Communications, Inc., announced last week, set the network industry on its ear, with reactions ranging from enthusiasm to skepticism.

All agreed, however, that the true impact of the billion-dollar deal cannot really be assessed until the companies integrate their product development and business operations. And that could take anywhere from 18 to 24 months, observers said.

"At first look, the sheer scope of this deal takes your breath away," said Melinda Le Baron, program director at Gartner Group, Inc., a consultancy in Stamford, Conn.

"Combining two companies of this size and getting technology and products integrated in a timely fashion is a monumental task," she added.

Under terms of the deal, Wellfleet will technically acquire SynOptics in a stock swap valued at more than $1 billion. Wellfleet is exchanging .725 of its shares for each of SynOptics' 69.5 million outstanding shares (see story, page 1).

While SynOptics is more than twice the size of Wellfleet based on revenue, Wellfleet's market capitalization (stock price multiplied by its number of outstanding shares) is greater.

LEVINE

The combined company, which has yet to be named, will feature Wellfleet's current president and chief executive officer, Paul Severino, as its chairman. Andy Ludwick, SynOptics' president and CEO, will hold those same titles in the new corporation.

On paper, the new company will become an industry powerhouse, with revenue of more than $1 billion annually. Its product suite will include routing, local network switching, hub concentration and Asynchronous Transfer Mode (ATM) technology.

"This deal proves you can lead a horse [SynOptics] to water and make it drink," said Fred McClimans, principal at Decisis, Inc., a consulting firm in Herndon, Va. "With the merger, you suddenly have a company with a great distribution strategy, a proven high-end direct sales force, a reasonably good installed base, strong ATM and switching technology, and the best routing architecture in the industry. No matter how you look at it, it makes sense."

While the deal looks good on paper, its success is tied to how the companies execute it.

"Managing two companies in a bicoastal manner means only one thing: Buy stock in United Air Lines," said Howard Anderson, president of The Yankee Group, a Boston-based consultancy.

"While [management is] the biggest challenge, this company will also have to mesh business cultures and styles, as well as distribution channels and manufacturing," he said. "Place that on top of the challenges it

See **Merger**, *page 22*

Novell's AppWare: ready or not?

Version 1.0 nears its delivery date . . .

BY CARYN GILLOOLY

Provo, Utah

Even as Novell, Inc. is getting ready to ship AppWare 1.0 during the next few weeks, company executives are starting to promote new capabilities to be added to future versions of the application development tools.

Future releases of AppWare that will be delivered during the next year or so will provide increased NetWare connectivity and distributed application development capabilities, among other things.

Novell this fall will release an upgrade to AppWare 1.0 that will include a distributed AppWare Bus and a developer's repository.

Next year, Novell will release a version that will allow developers to more easily integrate on-line services into their applications.

AppWare is a set of application development tools designed to help users and vendors write distributed, object-oriented network applications. It consists of three basic pieces:

- **AppWare Foundation** — A set of third-generation language application program interfaces (API) that let developers write cross-platform applications.
- **Application Loadable Modules (ALM) and AppWare Bus** — Blocks of prewritten code that automatically add a particular function into an application and the underlying engine that lets those pieces work together, respectively.
- **Visual AppBuilder** — An object-oriented, fifth-generation language application development tool that lets corporate users and independent software vendors (ISV) graphically develop their own applications.

To put the three pieces in better context, a large vendor such as WordPerfect Corp. would use AppWare Foundation when building cross-platform versions of its WordPerfect word processing program.

In contrast, corporate developers and ISVs would use Visual AppBuilder to more easily develop their own in-house or smaller applications. In-house developers would likely use

See **Delivery**, *page 22*

. . . while users seek added features.

BY CARYN GILLOOLY

One year and two slipped ship dates after Novell, Inc. first announced plans for AppWare, Version 1.0 of the application development tool set is almost ready for delivery. But according to users testing beta versions of AppWare's Visual AppBuilder component, the tool set is still incomplete.

Beta users said that despite four rounds of testing, AppWare is still missing some major pieces, such as support for the NetWare bindery (basically, the local directory service for NetWare 3.X and earlier versions of the net operating system).

Users also lamented that the software is harder to use than expected.

AppWare is a suite of application development tools for building distributed network applications.

The product consists of the AppWare Foundation, the AppWare Bus, Application Loadable Modules (ALM) and Visual AppBuilder (see story, this page).

Visual AppBuilder, an object-oriented programming tool, is the piece that most corporate developers will be using to build AppWare applications.

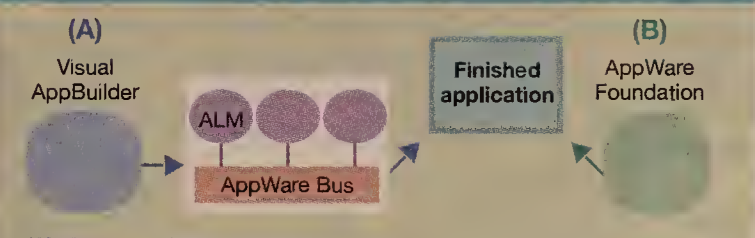
NO BINDERY SUPPORT

Users testing the product as well as those who have only seen demonstrations have primarily the same criticism: The product lacks support for the NetWare bindery.

"Novell's shooting itself in the foot again with AppWare," said Glenn Fund, president of the Boston Area Novell Users Group. "They have the [NetWare Directory Services] ALM to support NetWare 4 customers, but in their infinite wisdom, they forgot their NetWare 3 customers — you can't build an application that draws on the NetWare bindery."

See **Users**, *page 22*

Two ways to apply AppWare



(A) Visual AppBuilder is the tool users will employ to build or use multiple ALMs, which together will result in a finished application.

(B) Vendors, such as Oracle Corp., will use AppWare Foundation to build finished, cross-platform applications.

GRAPHIC BY TERRI MITCHELL

SOURCE: NOVELL, INC., PROVO, UTAH

BRIEFS

Cheyenne Software, Inc. last week rolled out InocuLAN 3.0, a new version of its client/server-based **antivirus software** for Novell, Inc. NetWare networks. The enhanced software — designed to protect NetWare 3.1X and 4.X file servers, as well as networked or stand-alone workstations — can now be used from DOS- or Windows-based management consoles anywhere on a network.

Other new features include support for a Windows graphical user interface, the ability to define and automatically update a group of servers in a domain and a new rules-based scanning engine that can detect viruses 25% faster.

InocuLAN 3.0 is available for $395 to $995, depending on the user license supported.

Cheyenne: (516) 484-3446.

InterCon Systems Corp. last week rolled out TCP/Connect II for Windows 4.0, a new version of its Windows-based **Transmission Control Protocol/Internet Protocol** stack that adds support for a 32-bit virtual device driver (VxD). VxD allows users to load DOS and Windows applications without using base memory, freeing up memory to run applications in Novell, Inc. NetWare, Microsoft Corp. Windows for Workgroups or Banyan Systems, Inc. VINES environments simultaneously. InterCon also added a gopher client for navigating the Internet and support for the Point-to-Point Protocol.

The new TCP/Connect II version is available for a 30-day trial period to Windows users who have anonymous ftp to the Internet. To install the software, download and install the file in the ftp server directory /intercon/sales/Windows/*.

A serial number and access key can be obtained through electronic mail at sales@intercon.com.

InterCon: (703) 709-5500.

3Com Corp. last week announced that it will dedicate $2 million in networking resources to the Santa Clara County school district in California to provide access to the Information Superhighway for 345 schools across the county. The initiative, which represents 3Com's largest community investment ever, includes $100,000 in cash, three man-years of dedicated, full-time expertise to install the network, and internships for high school seniors that will allow them to learn technical and communications skills.

The net will interconnect the schools, enable more than 60,000 students to communicate via E-mail and provide connectivity between the classroom and on-line information services such as the Internet.

3Com: (408) 764-5000.

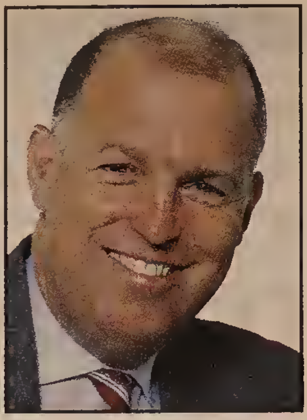
See **Briefs**, *page 25*

Merger

Continued from page 21

faces in integrating technology and product suites, and you can see this has the potential to get complicated."

Unlike 3Com Corp., which has a history of managing acquisitions, neither SynOptics nor Wellfleet has much experience in that area, Le Baron said.


HELD

"SynOptics failed to make the Cisco partnership work on the RubSystem, and its acquisition of Coral [Network Corp.] last year wasn't the answer, either," she said.

"Couple that with Wellfleet's merger inexperience and you have to question whether this merger may be too unwieldy," she added.

DOWNPLAYING THE DEAL

Predictably, competitors downplayed the deal.

Robert Levine, president and CEO of hub vendor Cabletron Systems, Inc., said SynOptics may have taken itself out of a large part of the market. "If four to five times as many users pick Cisco over Wellfleet as their router vendor, what will compel them to go with SynOptics as their hub vendor now?" he asked.

"This merger will only appeal to joint SynOptics/Wellfleet users, which is probably less than 30% of SynOptics' installed base," he said.

The announcement will drive Cabletron and Cisco to work more closely together under an existing strategic partnership but will make it more difficult for Cabletron to work effectively with Wellfleet, Levine said.

ANDERSON

Rob Held, Chipcom Corp.'s president and CEO, said the merger may cause more problems than it solves for the merger parties in the long run.

"This move will really confuse the joint SynOptics-Cisco users out there, and I don't see users willing to sit on their hands for the next 18 months while SynOptics and Wellfleet figure out how to make this work," he said.

"I don't see anything coming out of this that will challenge any of the current [market] leaders," he added. ☒

Delivery

Continued from page 21

ALMs with Visual AppBuilder to add features — such as database connectivity — to their applications, while third-party developers could use Visual AppBuilder to write their own ALMs.

The first release of AppWare will include the AppWare Foundation, Visual AppBuilder, 72 ALMs — including four network-specific ones — and an ALM Construction Kit, according to Joe Firmage, vice president of Novell's AppWare Systems Group, based here.

"AppWare is the first network-enabled development platform. For Novell, this represents a massive opportunity to innovate."

-Joe Firmage

The first four network ALMs will provide directory services, Message Handling Service (MHS)-based mail capabilities, client-based drive mapping and a Tuxedo transaction monitor front end.

AppWare pricing has not been released.

BEYOND VERSION 1.0

The top priorities for the next AppWare release are a Distributed AppWare Bus, a BASIC ALM builder and a repository system, Firmage said.

While the current AppWare Bus lets ALMs residing in the same system talk to one another, a Distributed AppWare Bus will let ALMs on different systems talk to one another.

The BASIC ALM builder will let developers use the BASIC programming language to develop ALMs — the version that ships with AppWare 1.0 uses C and C++, Firmage said. The repository will be a sort of library where developers can keep objects they have already developed, he added.

In addition, the fall release will offer support for the NetWare bindery, a sorely needed feature, according to many users (see story, page 21).

Beyond the fall release, Firmage said Novell would focus heavily "on the server side of the application construction equation. We'll work to integrate on-line services and directories of users — things available outside the user's machine" — into AppWare. He declined to be more specific. ☒

Users

Continued from page 21

Although Fund is not testing the product, he was intrigued by a demo that he saw.

"Still, it's not going to be useful to me unless I can call the bindery information," he said. "That's not a [good way for Novell] to kick off a product — by excluding its installed base."

Others agreed. "It's hard to imagine Novell shipping a product without it, but in this version, there's no way to work with the bindery," said Greg Myers, network administrator at Samson Companies in Tulsa, Okla., which has been testing the third beta version since May.

"And that's the kind of thing that could make this [product] extremely powerful," he added.

PLANNED SUPPORT

Novell plans to support the bindery in a new release this fall, the company said.

Myers had other criticisms, as well. He was surprised that Visual AppBuilder lacked the intuitiveness that Novell claimed — that it wasn't obvious what steps needed to be taken to build an application.

"It is easy to use — you can just click and drag objects the whole way — but it's still a lot like low-level languages in that you have to think about what you want your program to do," he said. "You still need to be a programmer to use this."

Beta user Haskia Hasson, president of Husk, an antique art dealership in Manhattan Beach, Calif., said, "It is easier by a great leap to develop within Visual AppBuilder than within any other environment, but to say that anyone could do this is not true."

"There are a lot of features you might not know to take advantage of if you weren't already a programmer," he added.

BRIGHT FUTURE

Despite the missing pieces in the first release, users are confident that AppWare will eventually be a very useful product.

"Once it's perfected, Visual AppBuilder will be a good tool," Myers said. "I'll most likely use it as a utilities programming language to develop quick applications for the help desk."

Hasson, who develops applications for his own company and others, said he is "banking on the success of AppWare.

"I'm not a NetWare user, but I've already given clients promises based on the things [Novell's] said it will provide in future releases," he added. ☒

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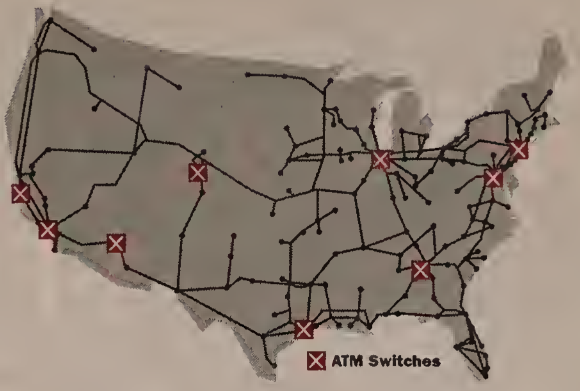

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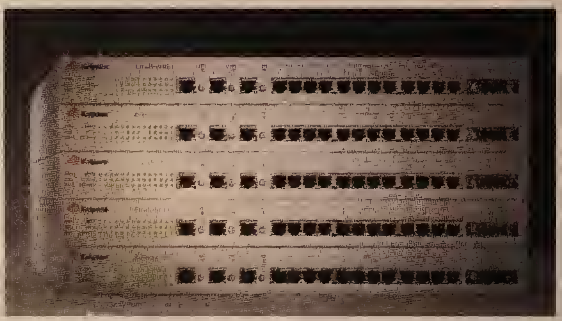

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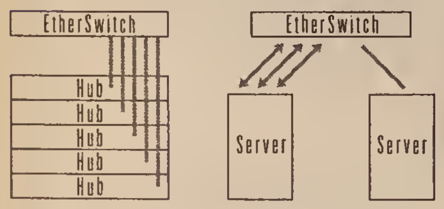

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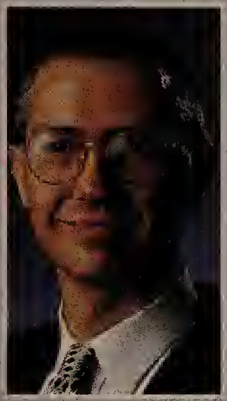
NET RESULTS

by Mark Gibbs

Out-networking Europeans

Once again, I find myself writing this column at 35,000 feet or thereabouts. It seems that I just can't stay away from flying these days.

I'm on my way back from giving a tutorial and attending a conference in London on the topic of the Information Superhighway.



The conference was attended by people from Scandinavia, Germany, Belgium, The Netherlands and Poland, among other countries. This made for a heady mix of attitudes not only toward the Internet, but also about the use of local-area networks, wide-area networks and personal computers.

When I talk to Europeans about networking, one of the things that strikes me is the difference between their approach and that of Americans.

Europeans, on the whole, seem to treat technology as a strategic business issue. The result is that the cycle time from identification of need to acquisition of technology is much longer for European organizations than it is for their U.S. counterparts.

Europeans may also tend to take their time buying into new technologies because of two major impediments they inevitably run up against in the WAN market.

The first is tariffs. In the U.K., for example, the concept of flat-rate local charges is a mere consumer dream. And start making long-distance calls in the U.K. or on the continent and you'll be digging deep into your pockets.

The second is regulations. Talk to a German about the restrictions imposed by the Bundespost on telecommunications and you'll wonder how they can even think of being competitive in the 21st century.

How on earth can European businesses ever hope to become information-based with restrictions like these in place?

And remember, what's bad for WANs is also bad for LANs.

As we've seen in the U.S., LANs and WANs are becoming increasingly integrated with the emergence of mobile networking as well as LAN and WAN services, such as Asynchronous Transfer Mode nets.

On the other hand, when Europeans do manage to get networks up and running, the systems generally tend to work and pay off.

How do they do it? Well, Europeans have what appears to be an obsessive commitment to cost management and strategic direction. When I've interviewed U.S. network managers on the topic of how they spend their time, I find that many of them are forced into being perpetual firefighters due to a lack of strategic planning.

On the other hand, I don't think that Europe, in general, will be as competitive in Cyberspace as will the U.S. over the next five years.

But it may turn out that early next century, we'll be looking over our virtual shoulders as the Europeans get out of their bureaucratic rut.

For as the U.S. will have acted as the world's test bed for Information Superhighway technologies, Europe will find playing network catch-up a whole lot easier.

We'll have to get more strategic to keep our edge.

Ah well, back to the in-flight movie.

➡Gibbs is a consultant and writer in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@rain.org.

Briefs

Continued from page 21

Solectek Corp. last week rolled out AirLAN/Parallel, a battery-powered, **wireless Ethernet adapter** that attaches to any parallel port on a notebook computer. AirLAN allows notebook users to maintain a link to their local-area network while conducting meetings in remote conference rooms or while roaming within a building.

The product has a battery life of 10 hours and an operating range of 800 feet in an open environment, or 80,000 square feet in a typical office environment. Available now, AirLAN costs $699.

Solectek: (619) 450-1220.

Fibermux Corp. last week unveiled a new Ethernet module for its Crossbow intelligent hub that adds support for the recently completed **10Base-FL standard** for running Ethernet over fiber links.

It will complement Fibermux's existing support for the Fiber Optic Inter-Repeater Link (FOIRL) on its current line of Ethernet modules. The new 12-port module offers 10 unshielded twisted-pair ports and two 10Base-FL connections, making it well suited for router-based collapsed backbone networks that rely on long fiber runs from work areas to a data center.

Available now, the module costs $2,095.

Fibermux: (818) 709-6000.

Olicom USA, Inc. last week rolled out the **EtherCom PCMCIA network interface card** that links notebook personal computers and other devices supporting the PCMCIA standard to Ethernet networks.

Available next month, the card costs $199 for the copper version and $249 for a model that supports both copper and coaxial cable connections.

Olicom: (214) 423-7560.

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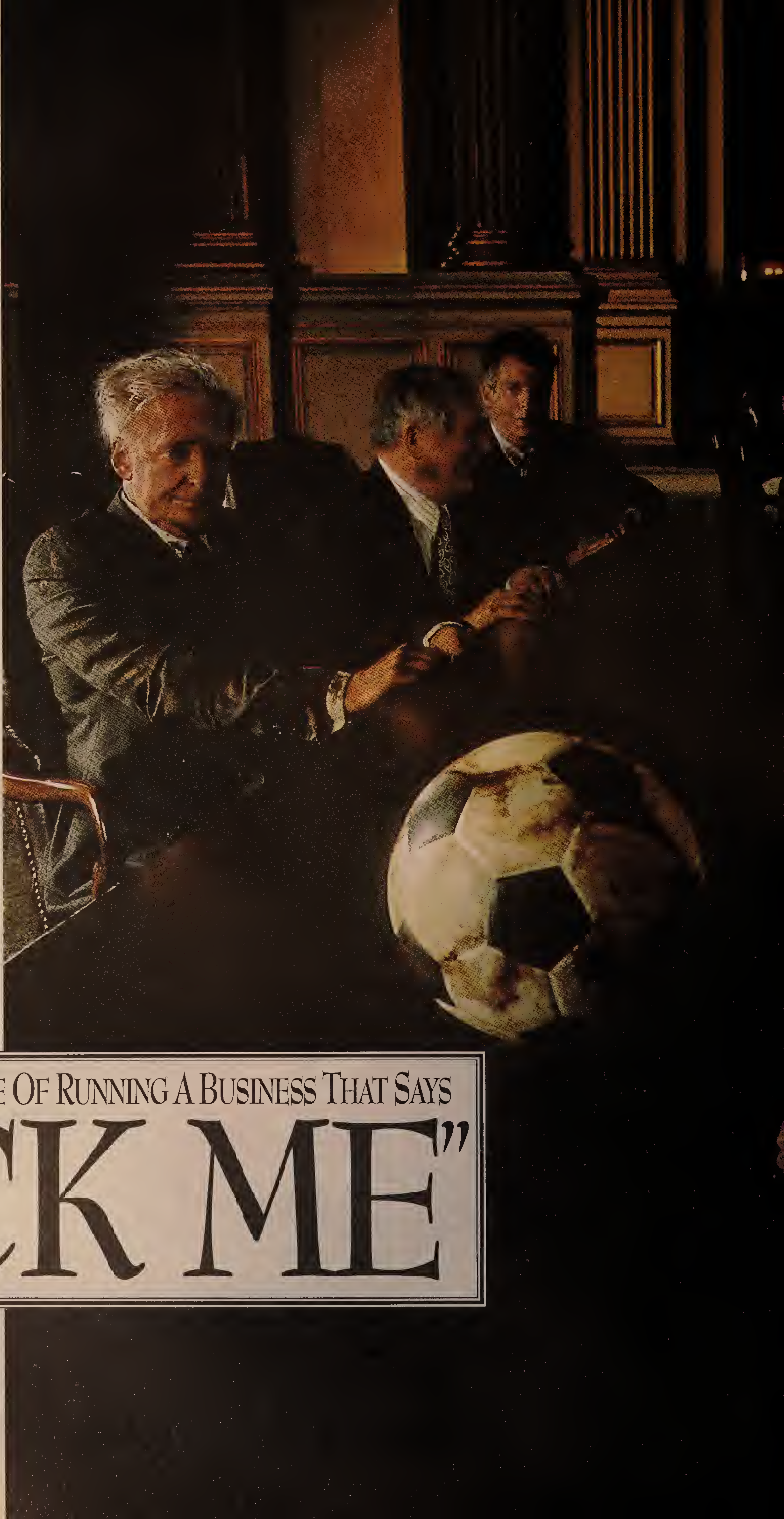

field operations for 24 World Cup teams in four different time zones. The entire business operation of the World Cup games — more than $1 billion — will be run on Sun computing. ◆ And remarkably, the entire network was installed in less than four months. ◆ Which may be why, as the World Cup games are kicked across America, a few eyes may also be on the computer system that was judged simple enough to manage, yet powerful enough to run the world's largest sporting event. ○ More than 135,000 businesses are using Sun systems, powered by the SPARC® chip and the Solaris operating environment, to gain a competitive advantage. The World Cup is just one. To learn more, call 1-800-426-5321, ext. 755. Or, on the Internet, access Sun's World Wide Web server at http://www.sun.com/

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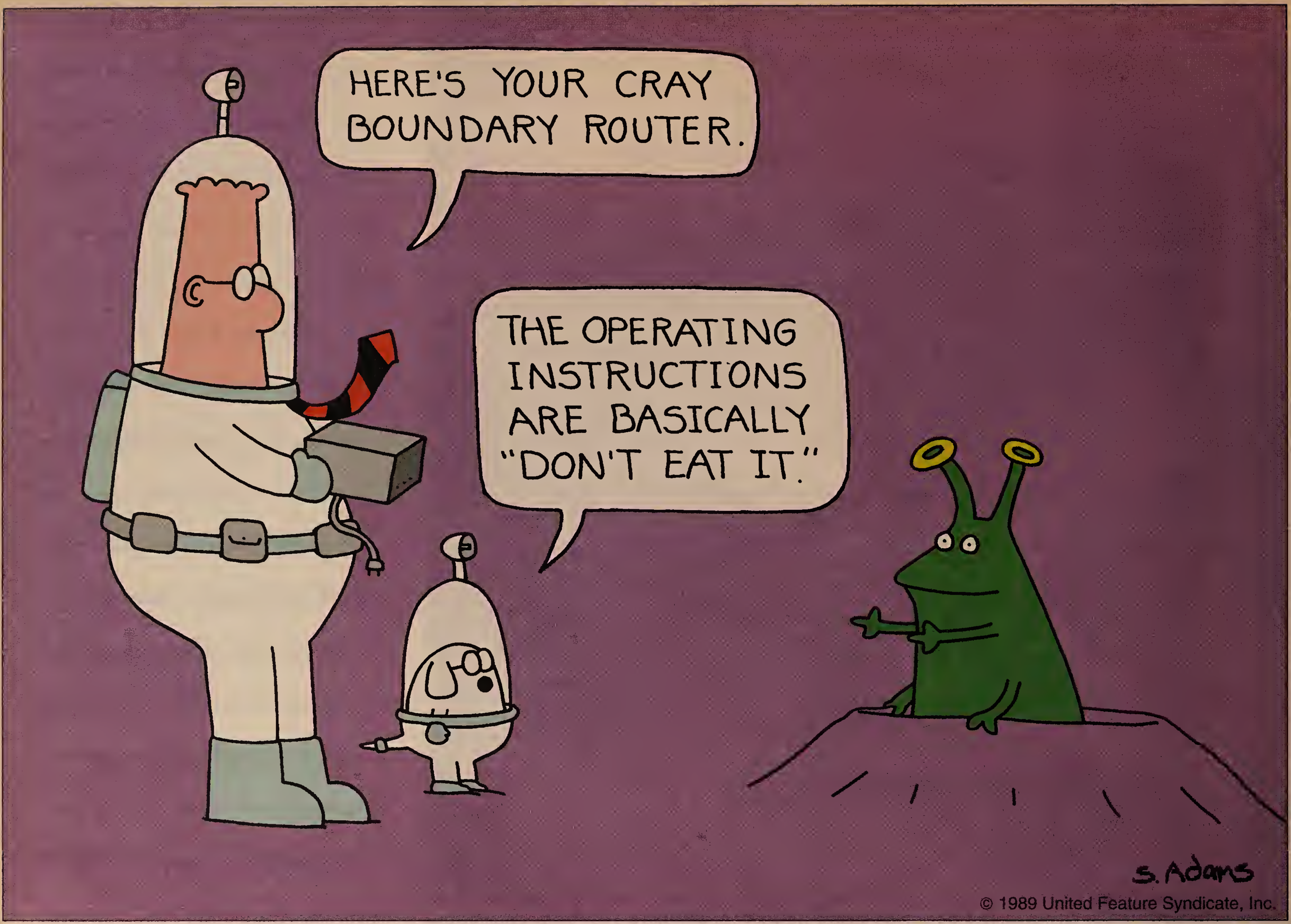
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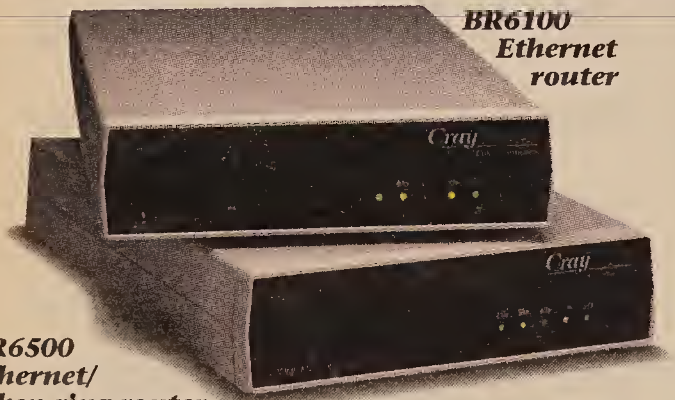

BR6100 Ethernet router

BR6500 Ethernet/ token ring router

Cray Communications' new BR6000 "plug and play" boundary routers let you extend network services out to sales people, telecommuters, and even your most remote offices. TCP/IP, IPX, X.25, frame relay, and PPP software is already installed. The user just plugs the router in at the remote site, and you configure it from your central location.

Available in Ethernet and token ring versions, the BR6000 features flash PROM updates and SNMP compliance. Auto dial backup senses a failure or potential failure and automatically establishes a dial-up connection.

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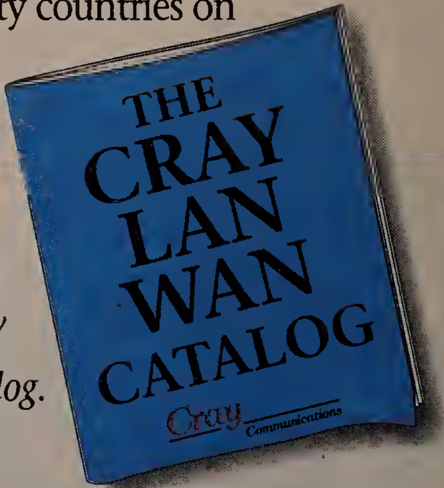

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GLOBAL SERVICES

Voice, Data and Wireless Services, Regulatory Issues and Voice CPE

Firm to resell SDN, 800 at big savings

BY DAVID ROHDE

Washington, D.C.

Firms looking for savings on virtual network, 800 and other services may have a new way to get them now that AT&T has agreed to let a reseller sign on for deeply discounted services under two preexisting contract tariffs.

Tel-Save, Inc. of New Hope, Pa., late last month won the right to resell Contract Tariff 516, which cuts 37% off Software-Defined Network and 800-service prices for companies with dedicated access to AT&T points of presence.

The settlement could clear the way for other resellers to search through AT&T's more than 1,300 contract tariffs for the juiciest terms to offer in resale to users who don't want to — or can't — negotiate their own special deals.

Several resellers have complained to the Federal Communications Commission that AT&T has refused to provision their orders for these contract tariffs — typically multimillion-dollar deals featuring discounts of 30% to 40% off regular tariff rates.

And *Network World* has learned that officials of Atlanta-based reseller GE Exchange, a division of General Electric Co., last month met with FCC Chairman Reed Hundt to complain that AT&T was holding up resale orders filed by GE Exchange under its parent company's $85 million-a-year Tariff 12 option.

Can't get no satisfaction

Resellers' top complaints about AT&T:

1. Tries to block resellers from ordering existing multimillion-dollar contract tariffs filed by AT&T that feature big discounts.
2. Requires extra paperwork when a reseller signs up a customer already served by another AT&T reseller at a higher rate.
3. Does not assign dedicated account teams to resellers as it does for individual customers with similar volume commitments.
4. Contacts resellers' prospective customers and markets to them directly.
5. Makes 800 service especially difficult to obtain through resellers.

SOURCE: FCC FILINGS, WASHINGTON, D.C.

THREE-LETTER RULE

In a document presented to Hundt and obtained by *NW,* GE Exchange claimed that AT&T has rejected 7,000 out of 50,000 GE Exchange orders by subjecting the reseller to the Three-Letter Rule.

The rule — which applies only when customers are moving from one AT&T reseller to another — requires three extra pieces of documentation, including a letter from the user to the previous reseller revoking their deal.

Coincidentally, a federal district court jury in Portland, Ore., last month ordered AT&T to pay $13 million to an AT&T reseller as a result of provisioning and billing problems associated with its resale of regular tariffs in the late 1980s and early 1990s.

"These things that have been simmering are now coming to a boil," said Ellen Block, partner in the law firm of Levine, Lagapa and Block, based here.

Reseller Tel-Save not only signed on for the 800 and SDN dedicated access contract tariff, but also Contract Tariff 120, which provides switched access services at a discount.

These two contract tariffs are especially desirable, said Tel-Save President Dan Borislow, because they offer rates that do not go up when AT&T raises its regular rates. That is not the case with many other contract tariffs, he said.

The settlement did not grant the company's request for two Tariff 12 options that would have provided even greater savings.

An AT&T spokesman said the requirement that the carrier file all its contract deals — still unique among long-distance carriers — acts as

See Resell, *page 35*

BRIEFS

MCI Communications Corp. last week announced MCI Vision Worldwide, a **discount international calling plan** for businesses spending $1,000 to $50,000 per month on long-distance services and at least 15% of that amount on international calls. The plan offers users 20% off calls to either Europe or the Pacific Rim, or 10% off calls to four countries worldwide. Those cuts are on top of 5% discounts all Vision Worldwide customers receive.

New Jersey late last month became the 47th state to sanction **toll competition** within a local access and transport area (LATA) when the state's Board of Regulatory Commissioners ordered New Jersey's $725 million intra-LATA toll market opened up. The board also plans in September to file a proposal allowing residences to specify their intra-LATA carrier the way they now do their long-distance carrier.

Arizona, California and Virginia are the only states yet to authorize intra-LATA competition.

Sprint Corp. has increased the top speed for dial access to its **SprintNet data network** to **14.4K bit/sec.** The higher speed access is available in 15 countries on three continents; support at an additional 30 sites is planned for next month.

Electric Lightwave, Inc., a Vancouver, Wash.-based provider of competitive access services in the western U.S., has announced its new LightRelay frame relay service. The company will use **Cascade Communications Corp.** switches to offer 56K bit/sec-and-up service in Phoenix; Portland, Ore.; Sacramento, Calif.; Salt Lake City; and Seattle.

LCI International, Inc. has applied to the **Federal Communications Commission** for permission to provide direct service to more than 40 of the world's top calling markets. Today, the company provides long-distance services through arrangements with other carriers. Pending FCC approval, though, it intends to own transmission capacity in several undersea fiber-optic cable systems linking LCI's U.S. network with foreign telecommunications administrations around the globe.

The **Federal Communications Commission** has received 736 complaints since December about billing for information services provided over 800 telephone lines. Charges can be assessed for calls to 800 numbers only if the caller has presubscribed to an information service under rules set out by the FCC last year.

AT&T and **Fox Broadcasting Co.** have signed an $81 million, multiyear contract to transmit Fox network programming over AT&T's Telstar 4 family of satellites. Fox will begin broadcasting over AT&T's Telstar 401 satellite this month, the companies said.

AT&T has added **PC access** to its **Definity Audix** voice messaging system, allowing customers to scan, prioritize and forward messages by pointing and clicking with a mouse. The company also added German, Dutch and Portuguese to the Audix languages available, enabling callers to be greeted in the language they prefer.

Forum closes in on spec for frame relay-ATM conversion

BY BILL BURCH

Chicago

The Frame Relay Forum is on track to complete by year end a standard for linking ATM and frame relay services.

Carrier support for the standard will give users a way to deploy Asynchronous Transfer Mode technology gradually because they will be able to link ATM sites with those where frame relay is the service option of choice.

"Frame relay-to-ATM interworking is critical to the success of ATM" because of the large and growing frame relay installed base, said Stan Kramer, public networking director at fast-packet switch vendor StrataCom, Inc.

The forum has already completed work on a related specification for carrying frame relay traffic over an ATM backbone but only to another frame relay site. The new services interworking spec, in contrast, defines the conversions required to let a frame relay site connect to an ATM location.

Forum working groups were taking up the standard at meetings here late last month. Their progress lags manufacturer and carrier announcements of ATM-frame relay interworking. AT&T, Cisco Systems, Inc. and StrataCom, for example, announced a joint specification in January 1993, Kramer said.

More recently, ATM leader Sprint Corp. announced a frame relay-to-ATM gateway in January and plans to have a standards-based service available in the fourth quarter, according to Brad Hokamp, Sprint frame relay product manager.

Such carrier support for the interworking specification will present users with a choice between relying on a carrier to handle ATM-to-frame relay conversion or handling it themselves with hubs or routers.

Major arguments in favor of carrier conversion are speed and avoiding the customer premises equipment cost. Carrier switches will be fast enough to minimize the interworking delay, said Ray Kang, a frame relay product manager at MCI Communications Corp., which also plans to support the service.

Frame Relay Forum

"The ability to minimize delay means it performs more as if it were a single service rather than an [interworking] service," he said.

However, some users say they are not counting on carriers living up to transparent interworking. "That sounds like typical carrier hype," said John Robinson, data communications manager at R.R. Donnelley & Sons Co. here.

According to Christine Heckart, a senior consultant at TeleChoice, Inc. in Verona, N.J., if a user employs a variety of protocols, it may be simpler to go with a carrier for an interworking service to alleviate protocol conversion management headaches.

In addition to the interworking standard, the forum's working groups are close to finishing a multicasting specification, which lets a user send a frame relay transmission to multiple sites at once. That standard will be sent out for a ballot soon, said Rajiv Kapoor, forum chairman.

Working groups are also close to a network-to-network standard for 45M bit/sec frame relay, but that standard will have little immediate impact on users, Kapoor said. The user-to-network interface standard that will allow users to send frame relay traffic at 45M bit/sec is only in preliminary form and will not be done for some time, he added. ◻

RATE & TARIFF MONITOR

by Eric Paulak

Local volume discounts get zoned

Got a volume discount on your local T-1 service? Check again. It may not be there anymore.

Along with the density pricing zones that were introduced at the beginning of the year, the local exchange carriers (LEC) are now filing tariffs to establish where private-line term and volume discounts are available on a central office-by-central office (CO) basis.

No one knows if current term and discount plans will be grandfathered, which means if your CO hasn't been designated as one that allows T-1 or T-3 volume or term discounts, you have two choices.

You can move your traffic to another CO to keep your discounts, but then you would have to pay higher access costs because of the increased mileage. In Indiana, for example, that secondary CO better be within two miles of your site, or you're going to pay an additional $100 per mile to reach your destination.

Your other option is to say good-bye to your discounts, which could take a big bite out of your budget. With term discounts as high as 45% in Indiana, for example, that's a difference of $115 a month or $1,380 a year for just one T-1 interoffice channel (IOC).

A little background: The FCC set up density pricing zones two years ago as a way for the LECs to maintain a competitive edge that they would otherwise have lost to competitive access providers (CAP) — such as Metropolitan Fiber Systems and Teleport Communications Group — in the recently opened private-line and switched access transport markets.

The edge is that density zones let LECs toeate three different prices for the same service based on the level of competition in a given area, as defined by the CO. With a large amount of competition in a downtown area, a LEC can offer the best of the three possible rates to its customers there. Before zoned pricing, the LEC had to offer the same rate to everyone in its operating area, no matter where they were.

Therefore, those users in density zones with the most competition are getting the best price breaks on their access services. And now, they are also the ones keeping the volume and term discounts.

So who's going to get their discounts taken away? The same users who now pay more in access rates: those in less densely populated areas. If you're in a large metro area, you shouldn't notice a thing.

How can you tell if your CO's got high-capacity term and volume discounts? Take a look in the National Exchange Carriers Association's (NECA) FCC Tariff No. 4. It lists all of the wire centers in the U.S., and under the office type category, NECA No. 4 lists a series of two-letter codes that represent what services are offered in that particular CO. Any CO that has the code PN offers term and volume discounts.

Unfortunately, not many of the PN codes are listed in NECA No. 4, even where it's obvious that volume and term discounts should be available (such as in large metro areas). Why? It's up to the individual LECs to forward that information to NECA, and they don't always do it. However, any CO that has a PA or a PJ code — those COs with the cheapest zoned rate — should keep its discounts.

Another way to tell is to look in individual LEC tariffs. Ameritech, for example, doesn't even list its density price zones in NECA No. 4. It lists them as separate access areas in its interstate access tariff.

If you can't find a listing in either tariff that says discounts are available at a particular CO, that doesn't mean that they aren't — at least for now.

The problem lies, however, in the fact that without the PN code, your LEC could choose to take away your volume and term discounts at any time. If you or one of your sites are not in an area that promises large profits to your LEC, there's nothing that would stop it from doing just that.

➾ Paulak is associate publisher for the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md. He can be reached at (301) 816-8950, Ext. 327.

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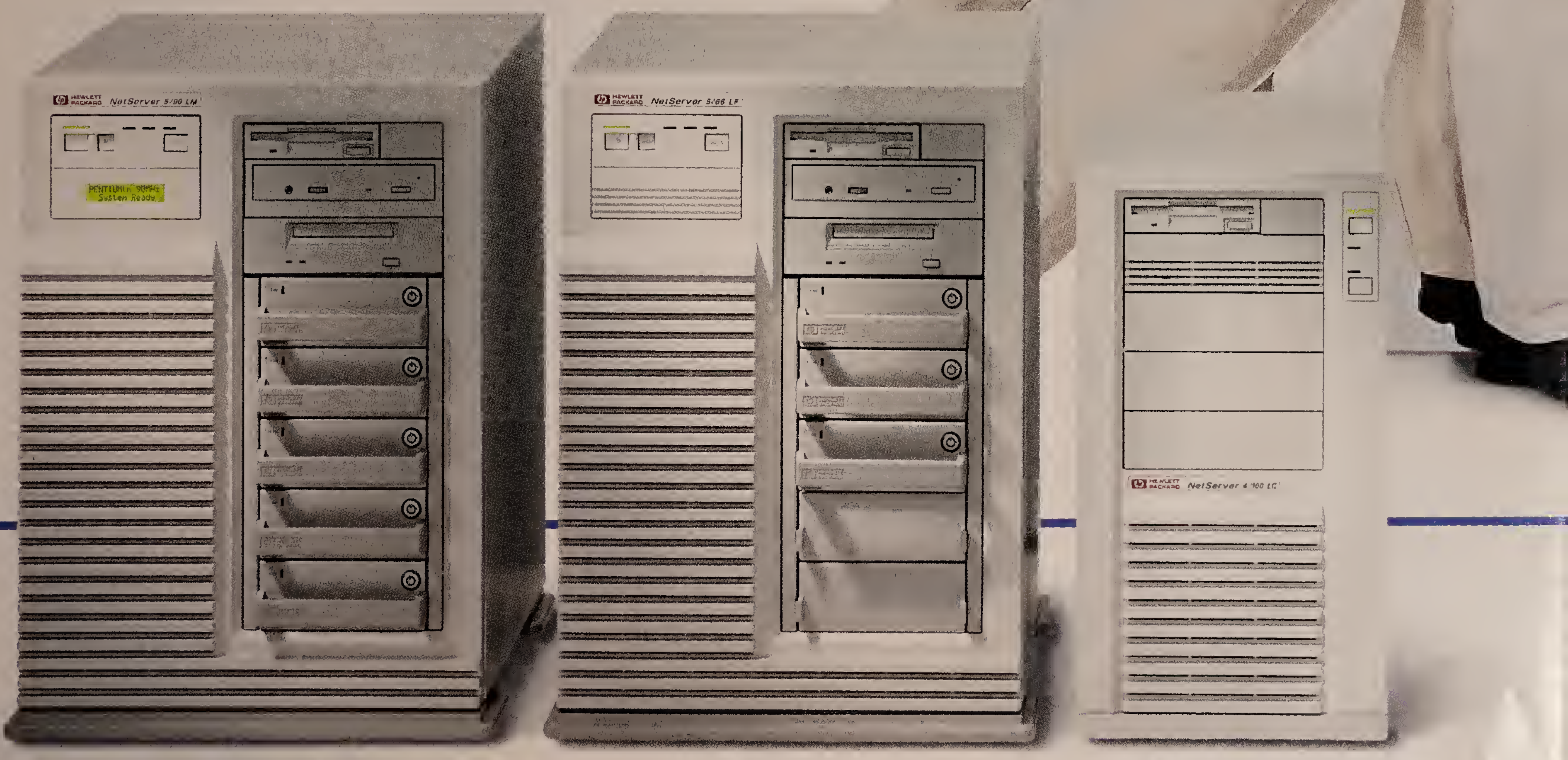
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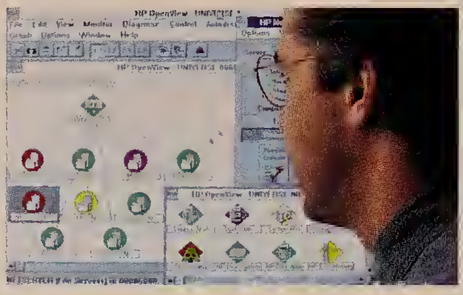

With HP NetServer Assistant 2.0, you get intuitive viewing of your network, comprehensive diagnostics, plus local and remote management, all in one package.

HP NetServer Assistant software helps you prevent problems before they occur—and gives you tools to resolve them if they do. And because it supports the HP OpenView platform, you can access your entire network from a single console. With HP Remote Assistant, you can manage the server from anywhere, even if it's down. Even if the network's down.

Performance? You can choose from single and dual Pentium™ models, as well as those with Intel486™ DX2 and DX4 processors. For compute-intensive applications, you'll want to look at the HP dual Pentium Symmetric Multiprocessing model. Whatever you select, you'll enjoy maximized uptime, thanks to RAID-based fault tolerance, hot swappable drive replacement and error checking and correcting memory.

Perhaps best of all, HP NetServers come to you from the company with an unparalleled reputation for quality, reliability and support—Hewlett-Packard. Which is undoubtedly why we can offer one of the industry's best warranties: three-year, next-business-day, on-site delivered by HP or your reseller.

For more information on HP NetServers, call us today at 1-800-533-1333, Ext. 8439. And the next time you feel a need to go somewhere, make it a vacation.

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For more information on HP's PC networking products, complete the business reply card next to Page 17.

What's missing is a unifying strategy, an organizing principle for all of the technological developments in PC networking, ensuring that the four major challenges are being met not just on paper, but with real products that resolve thorny networking issues in the real world

Networking: Today's Imperative

As networks evolve toward the ideal of providing high-speed access to any kind of information, at any time, in any location, the role of PC LANs has been evolving to keep pace. Four major trends are evident: PC LANs today are becoming larger, more capable, and more complex. More mission-critical applications are migrating to PC LANs. The cost of managing these LANs is increasing. And the demand for multimedia, which has hovered on the technological horizon for a couple of years, is beginning to be a factor in network design.

The challenges are clear. The responses of many PC networking providers, however, seem scattered. They present the market with a series of disconnected tactics, addressing only individual elements of the problem: more standardization to reduce complexity; more performance for mission-critical applications; more recognition for manageability as an issue; and more talk, with few specifics, about multimedia.

What's missing is a unifying strategy, an organizing principle for all of the technological developments in PC networking, ensuring that the four major challenges are being met not just on paper, but with real products that resolve thorny networking issues in the real world.

Hewlett-Packard provides that unifying strategy by helping network managers meet the four challenges of managing complexity, improving performance, reducing cost, and enabling multimedia *while satisfying today's imperative to extend and evolve existing networks.*

This recognition—that all improvements have to occur in the context of a company's existing investment in strategic networking systems—is a key element of HP's strategic vision, one that is shared by HP authorized value-added resellers.

The following articles describe some of the newest and most promising developments in PC networking: a new stackable architecture that offers users new flexible, distributable performance; 100VG-AnyLAN, which will provide a tenfold improvement in performance of either Ethernet or Token Ring networks without costly software or wiring changes; a new standard for multiprocessing that will help users of servers and PCs more easily reap the benefits of this high-performance technology.

Even as isolated innovations, these are exciting. But they are more compelling as examples of a unified vision. They illustrate HP's determination that networks be easy to extend to meet new demands for performance and capacity, and that they conform to relevant industry standards. They highlight HP's goal that networks be easy to evolve to meet constantly changing needs. And they confirm HP's strategy to embrace today's imperative. ●

Richard C. Watts
Vice President and General Manager
Personal Information Products Group
Hewlett-Packard

Richard C. Watts

PCI's bandwidth and throughput capabilities—together with its processor-independence, extensibility, and compatibility with other buses—will soon make it a common bus architecture for PC servers

Servers Catch the PCI Bus

Driven by the requirements of compute-intensive applications and higher server performance, a new local bus architecture is entering the commercial mainstream. Called the Peripheral Component Interconnect (PCI), this new architecture remedies the shortcomings of other buses in today's computing environment, where advances in hardware performance are almost immediately consumed by the demands of ever more complex applications. PCI's bandwidth and throughput capabilities, together with its processor-independence, extensibility, and compatibility with other buses will soon make it a common bus architecture for PC servers.

THE ADVANTAGES OF PCI

PCI was developed by Intel Corp. to fill two roles. On the desktop, it is a processor-independent bridge between high-speed peripherals and the CPU. In servers, it is used to accommodate traffic between these peripherals and main memory. Although Intel originated PCI, the company does not control it. In 1992, a group of companies formed a special interest group to manage the specification.

PCI brings four advantages to today's computing environment.

The first is performance. It is 32 bits wide, which yields a peak bandwidth of 133 megabytes per second (MBps) when running at 33 MHz.

The second is compatibility. PCI works with ISA, EISA, and MCA buses. Initially, PCI machines will have a combination of buses due to the natural dynamics of a market in transition. But there will always be a need for lower-performance buses to handle tasks where PCI's performance would be wasted (e.g., modems and parallel and serial ports), so compatibility will be an ongoing requirement.

The third is processor independence. The PCI specification has an intermediate buffer between the CPU and peripherals designed to isolate changes in processor technology from bus design so 486, Pentium™, PowerPC™, and other CISC and RISC processors will all work with PCI.

Which yields the fourth major advantage: PCI has several characteristics that allow it to provide performance benefits even in the face of significant future changes. Processor independence decouples bus and processor design. Extensibility lets PCI support a multiplexed 64-bit data and address bus, a requirement for the next generation of high-performance peripherals. This extension of its existing 32-bit data and address bus doubles the system's peak bandwidth to 264 MBps. Transparency, provided by a connector that accepts 32-bit and 64-bit cards, insulates the user from the details of communications between 32-bit and 64-bit peripherals. And auto-configuration lets users install PCI boards without having to manually configure jumpers, DIP switches, or interrupts.

New Solutions for Remote Server Management

Ever since companies began to rely on local area networks, LANs and servers have relied on each other to work well. Remote server management has therefore joined network management as a crucial capability for most companies. The two major advantages of remote management are maximized uptime and reduced cost. To achieve the same uptime with 24-hour local server management—the only other practical alternative—is expensive. "Lights out" server management—on-site management during business hours, and support from a remote operations center the rest of the day—is cost-effective and allows companies to consolidate their support staffs in one location, which enables additional savings.

IS executives today require the same kind of sophisticated remote management capability for PC servers that HP has spent decades developing for its large-scale systems. They want server management products that integrate seamlessly with enterprise management solutions. And above all, they want products to help them recover from serious server failure.

HP NetServer Assistant and HP Remote Assistant meet these demands. HP NetServer Assistant is software designed to give users the tools necessary to remotely manage the server in every situation except if the server is no longer running MS-DOS®. If the server has failed, but is running DOS, then HP NetServer Assistant can be used to notify administrators, allow them to dial in and remotely diagnose the problem, and recover operation of the server. HP Remote Assistant can be used in all failure modes. It is a battery-powered card that will either restart the server automatically or allow the administrator to dial in and recover server operation, even if the network is down.

Together, these two products bring large-system management capability to PC servers for the first time. They integrate with all three major management platforms. And they give system administrators a tool to restore operations even when both the network operating system and the server have gone seriously wrong. ●

PCI IN THE SERVER

In servers, PCI offers the paramount advantage of high performance.

Because PCI provides low-latency, high-bandwidth paths for access to PCI devices and main memory, it can support the kind of data transfer necessary for today's applications. A PCI server provides high-performance connections to 1) high-speed networking systems such as 100VG-AnyLAN and ATM, and 2) high-bandwidth, multi-channel disk array controllers.

Designers using PCI can integrate the functionality of multiple LAN connections onto one physical card

While EISA will continue to be a player in the server arena because of better driver and peripheral support, PCI offers some significant advantages. One of these is cost-efficiency. EISA has separate data and address pins, while PCI uses the same pins for both, thus reducing the overall size and cost of the IC package. And designers using PCI can integrate the functionality of multiple LAN connections onto one physical card. This gives users the benefit of using only one system connection to obtain multiple connections to the network.

HP has already implemented PCI on its HP NetServer LF and the new HP NetServer LC. Other PCI servers will follow according to customer requirements.

OPTIMUM

Hewlett-Packard's strategy with PCI is to give users the optimum combination of price and performance in servers. And it can also include cost-effective access to standard peripherals, giving users a cost-effective solution overall, with high-performance PCI bandwidth where they need it most. ●

For data sheets on the HP NetServer LF, the HP NetServer LC, and a whitepaper on PCI, call 1-800-296-5810, ext. 200, or check PCI on the business reply card.

Standardization Comes to Multiprocessing

Technical obstacles have received a lot of the blame for slowing the quest for an affordable multiprocessing server. Cache coherency, bus contention, scalability, and a host of other thorny problems have all challenged system designers. But another challenge, one with both technical and political elements, must also be met before multiprocessing enters the mainstream: standardization.

Until now, the multiprocessing market has been a market without standards, where every vendor implementation was different from every other. There is no common method for the operating system to communicate with the multiprocessing hardware. The net result is terrible inefficiencies for hardware and software vendors, high costs for users, and a situation where the dream of a multivendor multiprocessing environment was impossible to realize.

THE MULTIPROCESSING SPECIFICATION

Today a group of vendors, including Hewlett-Packard and Intel, are spearheading an effort to create a de facto standard for multiprocessing called the multiprocessing specification (MP Spec) Version 1.1. Hewlett-Packard is one of the first vendors in the industry that has systems (the HP NetServer LM2 and the HP Vectra XU PC) supporting this new standard for multiprocessing systems designs based on Intel processors.

The benefits of the MP Spec standard are analogous to the benefit of the uniprocessor standard for both applications and operating systems. Just as the PC specification does in the PC market, the MP Spec will let software developers write multiprocessing applications to a uniform standard. And, again as in the uniprocessor market, the MP Spec will let users buy shrink-wrapped multiprocessing operating systems and run them out of the box. (Users will also be able to run all existing uniprocessing applications on their MP systems unchanged.) As a result, users will be able to reap the benefits of powerful multiprocessing engines without having to worry, as they do today, about the myriad pitfalls of system configuration, performance, optimization, and interoperation.

Vendors are expected to embrace MP Spec because Intel is providing MP-ready components, which will make the development of cost-effective systems much quicker. A good example is APIC, Intel's Advanced Programmable Interrupt Controller. A major component of the MP Spec that handles I/O interrupts for multiprocessing, APIC is built into Intel Pentium™ 90 MHz and 100 MHz processors. MP Spec will also let operating system vendors quickly support a wide range of platforms with one MP OS product and one standard OS driver.

Hewlett-Packard is among the leaders in implementing the MP Spec. The HP NetServer 5/66 LM2 is a symmetric multiprocessing server that runs SCO MPX, Windows NTAS, and IBM OS/2® SMP.

MULTIPROCESSING GETS REAL

For multiprocessing to be a viable mainstream strategy requires three preconditions. There must be multiprocessing hardware, which already exists: HP's NetServer LM2, a multiprocessing application server, and the HP Vectra XU PC, a high-performance technical and business personal computer, are good examples. There must be multiprocessing applications written from the ground up to incorporate "multithreading," the ability to break up a given problem into many fragments, called "threads," and process them in parallel. Few multiprocessing applications yet exist. And there must be multiprocessing operating systems.

Every vendor implementation was different from every other

Here the picture is less black-and-white. The crucial characteristic is whether and how well operating systems support multithreading, which sometimes defies unambiguous pronouncements. Windows NTAS SMP, SCO MPX, IBM OS/2® SMP, and the proposed Novell NetWare™ MP, are all "fairly strong" in multithreading, but in ways that may or may not be quite different from each other—that are not standardized.

BENEFITS OF STANDARDIZATION

This is one of the areas in which the MP Spec will have a tremendous positive impact. Standardization will make the evaluation of the multiprocessing and multithreading capabilities of different applications and operating systems much simpler. It will allow every group with an interest in multiprocessing systems to benefit from lower costs and increased interoperability. And it will free vendor resources to concentrate on much higher levels of functionality and performance. ●

For data sheets on the HP NetServer LM2 and the HP Vectra XU PC, call 1-800-296-5810, ext. 200, or check MP Spec on the business reply card.

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Network-ready HP LaserJet printers for your LAN.

Much to be done. And precious little time to do it. Why allow network and end-user snags to distract you from the more important things?

The new, network-ready HP LaserJet 4M Plus and the HP LaserJet 4Si MX printers work in all the most popular network environments. Direct-connect right out of the box with the built-in HP JetDirect network interface card. And move between network operating systems without firmware upgrades.

The primary benefit to users is, of course, faster job completion time. Network-ready HP LaserJet printers bypass parallel-port bottlenecks. Maximize data-transfer speed. Provide bi-directional communication. And reduce the load on your file servers.

Other user benefits abound. Automatic switching between languages, I/Os and operating systems. Adobe™ PostScript™ Level 2 software built in. And versatile paper-handling capabilities.

Consider all this, along with legendary LaserJet reliability and HP's superior service and support, and there's really no question. Call 1-800-LASERJET, Ext. 8246 for more information.*

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HP LaserJet Printers

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Freedom of the (Networked Printing) Press

In 1920, A. J. Liebling wrote that “Freedom of the press belongs to those who own one.” If he were alive today, he might have added: “And not necessarily to those who have to use one over a network.”

This may be true for many kinds of networked printing. But Hewlett-Packard has developed a strategy to make the clearcut goals of reliability, flexibility of location, performance, interoperability, and manageability simple to achieve in heterogeneous networked environments: to make network printing as easy and productive as local printing.

A SUCCESSFUL NETWORK PRINTING STRATEGY

The fundamental building blocks of a successful network printing strategy are reliability and location flexibility. If network printers are not reliable, and if they cannot be placed near the people who use them most, then all the other benefits are superfluous. HP has built its network printing reputation on LaserJet and DeskJet printers that deliver solid, excellent performance over and over again. And the company has made it possible for network managers to place these reliable printers wherever they’re needed: either connected through systems, or directly to the network using the HP JetDirect family of print servers.

One step up from these foundation elements for network printing are the requirements for performance, interoperability, usability, and manageability.

HP addresses the performance issue by making it possible to connect printers directly to networks, thereby ensuring that printing occurs at network speed. HP printers, which are typically shared, have a modular I/O (MIO) expansion slot that accommodates JetDirect internal print servers for different operating systems. Having shared the MIO specification with its strategic partners, HP now has solutions for more than 95 percent of the network environments in use today.

Interoperability—the ability to print from anywhere to anywhere without regard for cable types, language, or NOS—is becoming a necessity in today’s heterogeneous installations. In addition to the fact that HP’s printers are network-ready printers and may have multiple interface cards, they have a number of automated features for interoperability. Automatic I/O, language, and network switching lets printers switch among I/O ports, page-description languages, and protocols/NOSs without user intervention.

For enhanced usability, HP has provided built-in intelligence and powerful utilities for its printers. Through HP Admin and HP JetPrint printer management utilities, users can get everything from remote configuration and front-panel viewing, to real-time status reports and point-and-click printing to the most convenient printer, to remote diagnostics and troubleshooting.

These last capabilities are really a part of manageability, an area administrators find increasingly important. Network printing, which was initially developed to save money and effort, can end up costing organizations if it is not easy to manage. A person who sends an important 15-page document to a printer can easily discover the many ways this seemingly straightforward process can become complex:

HP has developed a strategy that makes network printing as easy and productive as local printing

- Half the document is missing because the printer ran out of paper;
- The document is printed on letterhead from the wrong paper tray;
- The text is faint because toner was low;
- The document is now 100 pages long because the printer did not have the right page-description language.

And so on. When these events occur frequently, network printing does not save money; it becomes a drag on time, user productivity, and support resources. Hewlett-Packard’s network printing strategy is designed to develop a set of powerful management tools, based on the Simple Network Management Protocol (SNMP) and the Desktop Management Interface (DMI), to automate the management process as much as possible and reduce the incidence of these problems.

PRINTING PRODUCTIVITY

HP’s fostering of seamless compatibility across networks, support of industry-standard management systems, and ability to provide bi-directional communications capability with network printers make management much easier and more effective. When combined with the other elements of HP’s network printing strategy, these capabilities can transform a large part of a LAN manager’s job. Without HP’s network printing capabilities, LAN managers tend to spend a lot of time on crisis management. With these capabilities, they tend to spend more time on making networks—and network printing—much more productive. ●

For more information on HP’s network printing products and strategy, call 1-800-296-5810, ext. 200, or check Network Printing on the business reply card.

Look for us on all the major networks.

Word about PCs from Hewlett-Packard is getting around, and ratings are soaring. According to a recent CRN/Gallup survey, "Use of HP desktops in Fortune 1000 companies has doubled in the last year."[‡]

And with good reason. Our broad range of PCs not only meets users' expectations for power and ease of use, it also answers the needs of a network manager. With built-in features like on-board networking, advanced security and asset tracking, HP PCs have what it takes to be top performers on virtually any network. And soon our expertise in network management will reach all the way to the desktop, as we continue to pioneer the development of DMI (Desktop Management Interface).

For more information or the name of your nearest HP dealer, call us today at 1-800-322-HPPC, Ext. 8324. And tune in to the network superstars.

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Give your other PCs something to look up to.

If you're connecting PCs to a network,
scan this chart and you'll see it's time to hook up with HP.

STANDARD NETWORKING FEATURES	HP VECTRA M2 PC	COMPAQ DESKPRO/XE	DELL NETPLEX
Advanced Bus Architecture	VL-bus		
Integrated Networking Interface	16-bit		
Integrated, multiprotocal Boot-ROM	X		
ISA Plug-n-Play Compliant	X	X	
Multilevel Security Features	X	X	X
Asset tracking	X	X	
PC tattooing	X	X	
Optional Desktop Management Software	X		
Bi-directional parallel port	X	X	X
Desktop Management Interface (DMI)[3]	X		

HP quality in value-priced PCs.

- *Intel 486SX, 486DX2 and DX4*
- *Chip upgrades to higher performance*
- *On-board accelerated local-bus video*
- *210-MB hard drive*[1]
- *4-MB RAM, expandable to 64-MB*
- *512-KB or 1-MB of Video RAM standard*
- *ISA Plug-n-Play compliant*
- *Desktop Power Management*

HP Vectra VL2

- *EPA Energy Star certified*
- *Local bus Fast-IDE hard disk interface**
- *1280 x 1024 video resolution**
- *Optional 128- or 256-KB cache memory**
- *Free three-year limited warranty for parts and labor*[2]

from

$1,099†

High-performance network-ready PCs in a slimline package.

- *Intel 25- and 33-MHz 486SX, 50- and 66-MHz 486DX2, upgradable to Pentium Overdrive*
- *Optional 128- or 256-KB second level cache*
- *170-MB, 14-ms Fast-IDE hard drive*
- *32-bit Fast-IDE local-bus hard disk interface*
- *4- or 8-MB RAM, expandable to 96-MB*
- *Ultra VGA2 local-bus accelerated video supporting up to 1280 x 1024 resolution*

NEW!

HP Vectra N2

- *1 MB of video RAM standard, expandable to 2 MB*
- *Slimline package with two mass storage shelves and three ISA slots*
- *Optional integrated 10Base-T networking*
- *Multilevel security*
- *EPA Energy Star certified*
- *ISA Autoconfiguration utility (Plug-n-Play)*
- *Integrated Desktop Management Interface (DMI)*[3]
- *Free three-year limited warranty for parts and labor*[2]

from

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High-performance PCs for the connected office

- *Intel 33-MHz 486SX; 50- and 66-MHz 486DX2, 100-MHz DX4, upgradable to Pentium Overdrive*
- *Optional 128- or 256-KB second level cache*
- *Four mass storage shelves; four expansion slots*
- *One available 32-bit VL-bus slot*
- *210-MB, 14-ms Fast-IDE hard drive*
- *32-bit Fast-IDE local-bus hard disk interface*
- *8-MB RAM, expandable to 96-MB*

NEW!

HP Vectra M2

- *Ultra VGA2 local-bus accelerated video supporting up to 1280 x 1024 resolution*
- *Optional integrated 10Base-T networking*
- *Systems Diagnostics Utility*
- *EPA Energy Star certified*
- *ISA Autoconfiguration utility (Plug-n-Play)*
- *Integrated Desktop Management Interface (DMI)*[3]
- *Free three-year limited warranty for parts and labor*[2]

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$1,679†

Top performance for experts in connected environments.

- *Intel 60-MHz Pentium with 256-KB write-back cache*
- *One PCI slot, one shared PCI/ISA slot, two ISA slots*
- *Four mass storage shelves*
- *270-MB Fast-IDE hard drive with 12-ms access time*[1]
- *Integrated S3 928PCI graphics accelerator*
- *2 MB of VRAM expandable to 4 MB, 1600 x 1200 video resolution*
- *8-MB RAM, expandable to 192-MB*

HP Vectra XP

- *Integrated 16-bit 10Base-T networking interface with bus-master DMA*
- *Flash EPROM*
- *Systems Diagnostics Utility*
- *Power-on Self Test*
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- *Bi-directional parallel ports*
- *Free three-year limited warranty for parts and labor*[2]

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$3,559†

intel inside

yes
NetWare
Tested and
Approved

All HP Vectra PCs come with MS-DOS® 6.2 and MS Windows for Workgroups 3.11 pre-installed; HP mouse and keyboard included. *Feature included with some models. †List price, dealer prices may vary. Monitor not included. [1]Other capacities available. [2]First year on-site, 24-hour service. Second and third year return to dealer. [3]Available 9/1/94. ‡With permission CRN/Benchmark. MS-DOS is a U.S. registered trademark and Windows is a trademark of Microsoft Corporation. Pentium and the Intel Inside logo are U.S. trademarks of Intel Corporation. PPG403 ©1994 Hewlett-Packard Company

Remote Component Management Through DMI

After evolving on paper for years, the Desktop Management Interface (DMI) specification is now taking tangible form in a line of high-performance PCs. Hewlett-Packard is developing three new HP Vectra models—the M2, N2, and XU—to be DMI-compliant. These PCs represent the first, and broadest, product line to conform to the new specification.

A THREE-PART ARCHITECTURE

DMI is a set of APIs and related code that has been developed to create a common set of rules for managing PCs across a network. The particular benefit brought by DMI, and the reason behind the excitement concerning its development, is that the specification holds the promise of allowing remote systems management down to the level of individual components.

Any code for component-level systems management in the PC market must enable management information from an enormous range of components to be used by management applications that cannot possibly be tailored to each of those components' idiosyncracies. DMI meets this challenge with a three-part architecture that enables three key functions. It has a common set of APIs, so that third parties can write management applications to a common interface, not a bewildering array of components. It provides a uniform component interface, so that component manufacturers can provide management information in a completely standard format, and not have to worry about which management applications are most popular and what their requirements might be. And it has a service layer in between these two to coordinate and manage the traffic between applications and components.

DMI was developed by a consortium of eight companies (Hewlett-Packard, Digital, IBM, Intel, Microsoft, Novell, SunConnect, and SynOptics) called the Desktop Management Task Force, or DMTF. Hewlett-Packard became a charter member of DMTF and supports DMI for two reasons. First, the industry absolutely requires some kind of standardized specification for component-level management. And second, the specification for DMI is completely open, is easy to implement, and does not require approval by any standards-making body. As a result, the barrier for entry, and for successful innovation, is low.

DMI can be implemented in several kinds of products: components like network interface cards, mass storage devices, printers, faxmodems, and video cards; applications such as spreadsheets, databases, and network management applications; and can work with the Simple Network Management Protocol (SNMP) and Common Management Over LCC (CMOL). In the future, DMI could easily be incorporated into all network operating system

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Improving Performance with Integrated 32-Bit Networking

One strategy for enhancing network throughput essentially ignores the network side of the equation, and instead focuses on system internals. After all, looking at the communications process as a whole, if data gets *to* the network faster, it will go *through* the network faster as well.

Hewlett-Packard is among the first companies to implement this strategy in the PC market. By integrating a 32-bit Ethernet controller for the Peripheral Component Interconnect (PCI) bus onto the motherboards of its HP Vectra XU PCs, HP has given PC users a jump in performance on both sides of the networking interface.

COMPETITIVE ADVANTAGES

The main reason for integrating 32-bit networking onto the motherboard is simplicity. Integration solves a number of compatibility problems, as well as obviating the entire issue of configuration; integrated 32-bit networking is completely preconfigured and ready to run.

The main reason for using PCI is, of course, performance. But that's not the only reason. PCI also offers compatibility, processor independence, and the ability to be "future-proof"—significant benefits in today's networking environments.

The performance advantage is impressive. With its 32-bit-wide architecture running at 33 MHz, a PCI bus yields a peak bandwidth of 133 megabytes per second. At 10BaseT line speeds, that gives users an approximate jump of 10 percent in network performance for no additional network investment. But the HP Vectra XU PC will have PCI slots that allow users to add 100VG-AnyLAN PCI cards. At 100 megabits per second (Mbps), bus bandwidth is a significant limiting factor in overall network throughput, and a PCI bus offers a tremendous competitive edge. Users can expect a 1000% network throughput improvement with a 32-bit PCI 100VG-AnyLAN card versus a 10BaseT Ethernet card.

Integrated 32-bit Ethernet/PCI on the motherboard also provides a compatibility advantage. PCI is unique in the local bus arena in that it works with existing ISA and EISA buses, thus helping IS managers gain a powerful performance increment, but still preserving their investment in these older bus technologies.

Added to this "bus independence" is processor independence. The PCI specification provides an intermediate buffer between the processor and the peripherals. This effectively decouples changes in processor design from the local bus specification, providing more flexibility and another means of investment preservation.

Finally, PCI is relatively impervious to future technological change. Future processor designs will run over PCI. The multiplexed 64-bit data and address bus required by the next generation of peripherals will be

continued on page 17

Thanks to the power of the new network, the Indians have been able to take the $40 million concessions business back from contractors and bring it into their own organization

The Cleveland Indians Build a Digital Data Warpath

To look at the salary structure of a major league baseball team is to enter a world that makes cost-accountants cry. Imagine running a company where the average salary of your employees is hovering around $1.1 million a year, and you begin to get the picture. If money talks, baseball is one of the loudest businesses on earth.

On the field. But in the front office, where the nitty-gritty support functions of the National Pastime happen, it's a different story. Here the pressure to cut costs is ferocious, and baseball business people face a dilemma. How can they manage the enormous amounts of information generated during a six-month season without spending enormous amounts of money to do it?

MORE CONNECTIONS, FEWER STAFF

The Cleveland Indians resolved that dilemma with a low-cost, high-performance network from Hewlett-Packard. When the city decided a few years ago that it was time for a new ballpark, the organization decided it was time to make their front office the most efficient in the major leagues. So they entered into a 12-month evaluation/design process to come up with an information system that would do four things: be a single sitewide data highway, support up to 700 client PCs in four widely dispersed business units, be manageable from one station anywhere on the network, and not incur the cost of a larger IS staff.

"At a bank with that many nodes, the IS staff would probably be between 20 and 30 people," says Michael Zoldan, the Indians' director of information systems. "We don't have that luxury." Zoldan says the Indians' IS staff has five people now. And thanks to the functionality and ease of use of HP systems, it will not have to grow.

During the evaluation/design process, Zoldan and the IS team winnowed all possible vendors down to Hewlett-Packard, IBM, and Compaq based on a single criterion: Would they be a long-term player in the market? From these prospects, they signed Hewlett-Packard "because they were head and shoulders above the others in three areas," Zoldan says. "First, they provided a complete solution that was simply not available from the other two vendors. Second, they had a strong relationship with Novell, and the ability to bring Novell in to help with the NOS whenever necessary. And third, they really took ownership of the entire project. From project meetings, to installation, through to post-installation evaluations, HP had a team of certified engineers here. No other vendor could do that."

HP's willingness to get involved in all aspects of the network project turned out to be crucial. The new stadium was a partnership between the public and private sectors, and was funded in part through the imposition of new taxes on tobacco and alcohol. Any slip up had the potential to bring the wrath of the public (and of tax-averse politicians) right down onto the heads of the Indians' IS department.

"We were under a microscope," Zoldan says. "But HP took it upon themselves to make this network a showcase. They said they wanted to make it the finest solution available, and it is."

What the Indians wanted was a single data superhighway—a digital warpath, if you will—that would use 10BaseT Ethernet running over fiber optic cabling to link up to 700 client PCs in four separate, geographically dispersed business entities. These included a 42,000-seat ballpark in Cleveland, an adjacent four-story office building, two remote sites in other parts of Ohio, and the entire spring training facility in Winter Haven, Florida.

A $40 MILLION BENEFIT

The Indians are one of a new breed of corporation that will run its operations entirely on PC-based systems. Topologically, the network that connects these systems is 28 star subnets, segmented with HP hubs and connected to remote sites with the HP Router RB for wide-area connectivity. Logically, however, it is a single network that connects all desktop PCs, 20 HP NetServer LM servers, and a total disk-farm of 30 gigabytes. The benefits the new network has brought to the organization are staggering.

First, the IS department's staff will stay the same size despite a radical increase in the amount of automation. This is a result of network management utilities from Intel and Novell, the remote manageability and ease of use built into HP equipment, and the power of HP's OpenView network management platform. "We have a tightly integrated network management system," Zoldan says, "which allows us to keep the net running efficiently without increasing staff."

Second, the entire organization's permanent staff is 20 percent smaller than it otherwise would have been because the cash accounting systems—which used to be variations on the "left pocket income, right pocket change" system—have all been automated and networked to the central office.

And third, thanks to the information management power and visibility provided by the network, the Indians have been able to take the concessions business back from contractors and bring it into their own organization.

"That's a $40 million to $50 million business," says Zoldan, with significant profit potential for the ballclub. "And we'll be able to stretch our existing IS staff to cover it easily. With this setup, we can sit at any workstation on the network, even down in Winter Haven, and manage every aspect of the network."

A NETWORK MANAGEMENT WIN

This ability to manage the entire network easily is crucial to the Indians' ability to control costs. The ballclub exists in a complex business information environment characterized by tens of thousands of cash transactions every day of the season—and sophisticated, large-scale financial planning, control, and analysis every day of the year. To win—on the field and off the field—the Indians have to manage this information environment and make it work. And to do that, they depend on Hewlett-Packard. ●

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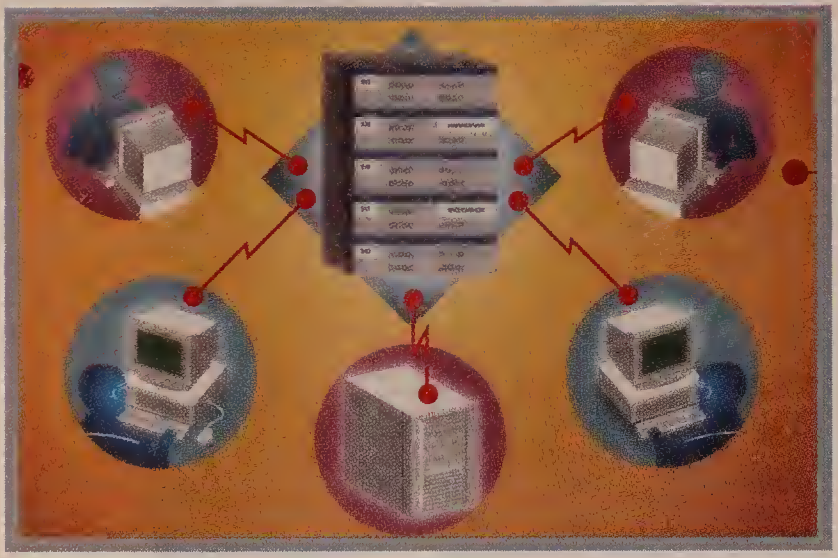

A Stackable Architecture for an Open Network Future

They sound so simple: "Extend" and "Evolve." But these two new networking imperatives demand that network managers resolve a pair of exacting dilemmas. How can an organization extend the productive lives of today's equipment, and still have an architecture that can be evolved to accommodate the demands of future technologies? And how can it do the same things with its network management system? Hewlett-Packard has developed the AdvanceStack architecture and an OpenView-based management system to answer these questions.

Today's computing environment is distributed, full of existing systems, standardized, in need of powerful automated management tools, and is constantly changing to accommodate new technological futures. This is the environment for which the HP AdvanceStack network architecture, with its eight essential principles of distributed network connectivity, was built; it is open, distributed, scalable, predictable, dependable, economical, manageable, and it provides excellent performance. The net result is that that the AdvanceStack architecture allows network managers to satisfy the imperative to not replace existing networks, but to extend and evolve them.

EXTENSION

The distributed computing paradigm has triumphed, with small, powerful systems sitting on desktops and communicating over ever-faster networks. Yet to service these networks, some manufacturers have built large hardware chassis with proprietary cards and fast backplanes that sit in central computer rooms—a kind of network-infrastructure "mainframe." This defeats the goal of distributing communications capability throughout the enterprise, and results in a single point of failure that can knock out large chunks of the network.

Stackable network systems provide an alternative that maps more directly to the distributed nature of today's networks. HP's AdvanceStack network connectivity products—hubs, bridges, and routers—use all of the same topologies and wiring as existing LANs. AdvanceStack hubs can be combined to provide good throughput for large numbers of users. They can seamlessly introduce increased performance into

Making Fast Ethernet Real

The promise of 100VG-AnyLAN, a new Fast Ethernet standard developed by Hewlett-Packard, is compelling: higher performance, integration with current networks, and the ability to handle new video and multimedia applications.

A natural evolution of 10BaseT Ethernet and Token Ring networks that supports their basic frame technology, 100VG-AnyLAN lets organizations extend and evolve their existing networks.

It can deliver 100 megabits per second (Mbps) to every node in a given network with no major software changes. It lets organizations preserve and leverage the overwhelming majority of their investments in Ethernet and Token Ring networks. And its deterministic Demand Priority arbitration system enables video, voice, and multimedia applications, which require guaranteed bandwidth and predictable, low latencies.

With the introduction of four new products—a hub, a 10/100 bridge module, and two adapter cards—Hewlett-Packard has become the first company to make the promise of 100VG-AnyLAN real. In isolation, these products extend the performance of 10BaseT networks. But as part of a product family, they also provide a migration path for the rest of HP's AdvanceStack systems, giving network planners a way to evolve existing systems so that they can include future, high-speed networking technologies.

The HP AdvanceStack 100VG Hub 15 is an intelligent central controller with 15 ports and one additional uplink port that can be used to "cascade" hubs.

The HP 100VG SNMP Bridge Module is a bridge/SNMP management card that allows users to bridge to existing Ethernet networks.

And the HP 10/100VG Selectable ISA/EISA Adapters are cards that support 10BaseT or 100BaseVG operation, giving users and administrators a great deal of flexibility in allocating bandwidth where it is needed most.

Because it accommodates existing equipment and systems so well, 100VG-AnyLAN gives users some powerful advantages. It requires no changes to application software on clients or servers, and is compatible with current NOSs. It requires no changes to bridges and routers, supporting the frames and network management systems already in use. It gives users 100 Mbps performance. It gives administrators a seamless way to boost the performance of 10BaseT by a factor of 10. And it gives organizations a networking system that allows them to realize these higher data rates over existing Category 3, 4, or 5 wiring, thus obviating one of the biggest costs of network upgrades. In short, it gives anyone making network decisions a way to sidestep the old choice between getting higher performance or preserving existing systems. With 100VG-AnyLAN, for the first time, they can do both. ●

For data sheets on HP's 100VG products, call 1-800-296-5810, ext. 200, or check 100VG-AnyLAN on the business reply card.

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any place on the network, as it is needed. With their "instant-on" capabilities, AdvanceStack products can be used to easily connect existing LANs. And because they all support major networking standards, they can be introduced into existing networks with no NOS or application software changes. In other words, HP's AdvanceStack products allow network managers to extend existing networks to meet new requirements without having to change the entire network infrastructure.

EVOLUTION

For its ability to evolve to meet constantly changing future needs, the AdvanceStack architecture has no competition. Because of the ability to "stack" multiple units to add incremental performance, the architecture is almost infinitely scalable. It also offers a complete range of price/performance options: 10 Mbps to 100 Mbps shared-bandwidth LANs; 10 and 100 Mbps switched LANs; high-speed async and synchronous remote links; and, in the future, local and remote ATM switching and routing.

Given networks' propensity for growth, this scalability and range are powerful advantages. When coupled with AdvanceStack's standardization, the benefits are even greater. Network managers are being asked to control operations costs, to not shut the door on future video and multimedia applications, and to avoid dead-end expenditures. AdvanceStack's ability to accommodate all major standards obviates these potential pitfalls, enabling managers to evolve the network easily to meet even the most rigorous application requirements.

NETWORK MANAGEMENT

Of course, none of this would be any good if AdvanceStack did not also offer the network management tools that administrators need. To achieve well-managed networked PC hardware in today's distributed environment, management solutions must be integrated and open: integrated so that people can manage disparate networks from a single platform; and open so that they have the ability to add new tools to the management platform as they are developed.

HP's network management is built on the industry-standard OpenView network management platform, with support for MS Windows™, Windows NT, and UNIX®. In addition to hundreds of third-party management applications, HP has a core set of applications built on OpenView that allow network administrators to select a level of management appropriate to their network: basic management, for networks that do not need SNMP management, but do require configuration, monitoring, and troubleshooting; SNMP management for larger, more traffic-intense networks with tools for increased security, network firmware management, and network diagramming; and advanced management based on HP's EASE instrumentation—instruments embedded into AdvanceStack hardware that help optimize network performance, pinpoint trouble spots, and define traffic patterns.

THE BIGGEST POTENTIAL GAINS

Extend and evolve. Both HP's AdvanceStack architecture and its OpenView-based management solutions are designed from the ground up with these in mind. AdvanceStack extends and evolves the actual network infrastructure. And the management solutions help extend the useful lives of past investments while they help users evolve their management capabilities, keeping future options open by adhering to an open architecture that supports all major management standards. Providing cost-efficient, open, and flexible networking in today's environment is a challenge. But given the potential gains in productivity that could result, it is a challenge well worth meeting. ●

For data sheets on the HP AdvanceStack products, call 1-800-296-5810, ext. 200, or check HP AdvanceStack on the business reply card.

Written by David McDougal, a technical writer based in Redwood City, California.
Produced by Reed and Ingle of Saratoga, California.
Designed by Lisa Ferdinandsen of Power Productions of Palo Alto, California.
Illustrations by Nick Fain/Electronic Images, San Francisco.

DMI

continued from page 12

environments, and many DMTF members—including IBM, Microsoft, and Intel—are either investigating the possibility or planning to incorporate DMI into their offerings.

A TWO-PHASE DMI STRATEGY

Hewlett-Packard has a two-phase strategy in DMI. The first is Remote Management, which ensures that HP systems have the hardware, firmware, and software to take advantage of DMI's ability to remotely manage PCs. The HP Vectra M2, N2, and XU PCs—and future PCs from HP—will implement this first phase. Remote Management includes alert management and automatic alert propagation through various communications media to network managers. HP's particular value-added will be the user's ability to remotely manage the company's trouble-free personal computing (TFPC) features: ease of use, setup, security, for example. This first phase is essentially concerned with either initialization or reacting to negative events.

Active Management is the second phase, which involves remote firmware upgrades, software revision control, group client control, and the ability to send broadcast messages. The second phase allows systems administrators to manage for optimum performance, not just fewer service interruptions.

The reason DMI is important is that it holds such promise for reducing one of the rising costs of networking: the cost of maintenance and administration in an environment where networks are getting bigger and more important with each passing day. With the ability to remotely manage PCs down to the component level, administrators can dramatically reduce the cost of ownership by managing larger networks with smaller numbers of staff.

The addition of DMI to Hewlett-Packard's line of Vectra PCs rounds out the capabilities of a system built for demanding networked computing environments. Remote management enables users and administrators to more fully exploit these systems' fast processors, advanced bus architectures, impressive video capabilities, and integrated 16- and 32-bit networking capabilities. Because with DMI, administrators can manage PC systems for optimum performance, not just acceptable levels of downtime. ●

For data sheets on the DMI-compliant HP Vectra PCs, call 1-800-296-5810, ext. 200, or check DMI on the business reply card.

32-Bit Networking

continued from page 12

supported by PCI. The details of 32-bit/64-bit translation are transparent to PCI.

Finally, HP's integrated 32-bit networking strategy improves network throughput by exploiting PCI's concurrent processing advantages. The network controller chip contains all of the logic necessary to send and receive data and network requests with an absolute minimum of CPU intervention. The usual two-step buffer memory system is therefore unnecessary, which improves network performance. And the CPU is freed for other tasks, which improves system performance. And if system performance is improved, then data is getting to the network faster; and the network-performance implications of that are clear. ●

For a data sheet on the HP Vectra XU PC and a white paper, call 1-800-296-5810, ext. 200, or check Integrated 32-bit Networking on the business reply card.

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NETWORK WORLD

AT&T readies the industry's first ATM-over-satellite trial

BY JOANIE WEXLER

Basking Ridge, N.J.

Ground-breaking efforts are afoot to one day extend the benefits of Asynchronous Transfer Mode to remote corners of the globe.

AT&T, Kokusai Denshin Denwa Company, Ltd. (KDD) of Japan and Telstra OTC Australia are planning to begin a technical trial this month for transmitting ATM traffic over satellite links — paths that have a much farther reach than the world's cabled infrastructure.

Such links could be valuable to international concerns such as oil exploration firms and news organizations, which have outposts in remote parts of the world, where cabling is unreliable or nonexistent, analysts said.

The idea would be to speed the expansion of AT&T's core, fiber-based InterSpan ATM network service to more locations. Traffic chopped into cells for transmission could be carried by a mix of fiber and satellite links, said Joel Boroff, the trial project leader from AT&T Bell Laboratories.

"Generally, I don't care what medium the traffic rides on as long as it is reliable and cost-competitive," said Ted Boynton, manager of telecommunications at Praxair, Inc., a global industrial gas manufacturer based in Danbury, Conn. "But we've been trying to get video into Mexico City for six months, and the infrastructure just doesn't support it. Soon we'll be facing the same issue in mainland China."

The tricarrier trial will last 12 to 18 months, with beta customers to join the network in the fourth quarter of 1995, Boroff said.

The goal will be to minimize the impact of satellite communications — such as connect-time delay and weather sensitivity — on ATM, a scheme that inherently depends on very fast, reliable links. For instance, ATM does no error checking on its own, although COMSAT Laboratories is developing "link enhancers" to be used in the trial for this purpose.

"Setup must be as fast as possible because one goal of ATM is very low latency," said a network strategist at a large Northeast pharmaceuticals firm. ATM specifies low latency because it is optimized to mix delay-sensitive and nondelay-sensitive traffic on one link.

With the delays incurred by uplinking and downlinking data to satellites 23,000 miles up, "it seems the advantages of ATM would diminish," the user said.

"The initial ATM premises of very high speeds and low error rates could be violated," agreed Ron Jeffries, principal of Jeffries Research and editor of "ATM User," a newsletter in Santa Maria, Calif. Also, ATM switches may need bigger buffers for congestion control to accommodate the prolonged delays, he said.

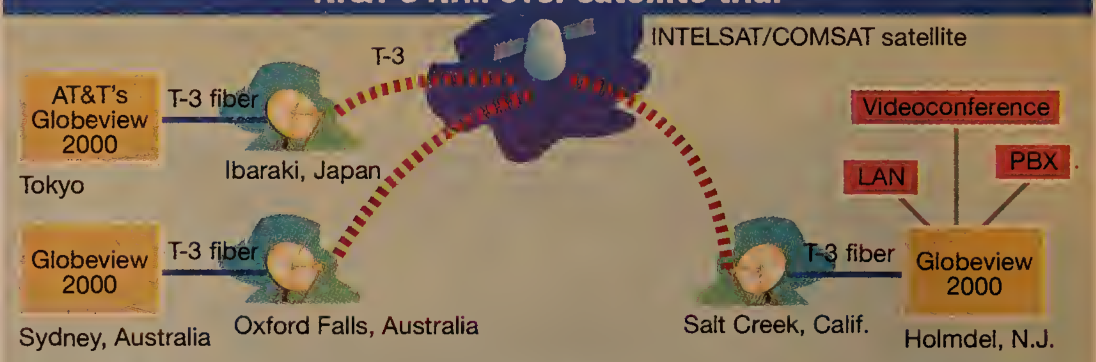
The test net will shuttle ATM traffic among Tokyo, Sydney, Australia, and Salt Creek, Calif., by satellite and will be based on AT&T Network Systems' Globeview 2000 ATM switches (see graphic). The facilities will be brought up this month, with application testing to follow in the fourth quarter.

Successful ATM-over-satellite tests could also lead to new AT&T services with a global, broadcast-oriented reach, he added.

The satellite connections through COMSAT World Systems' INTELSAT satellite net will run at 45M bit/sec, the same speed as an AT&T-KDD ATM fiber trial now under way.

Rival Sprint Corp. has no such efforts in place, but MCI Communications Corp. demonstrated an ATM-over-satellite application with COMSAT in Cairo, Egypt, in May. A company spokesman said the carrier is considering international ATM-over-satellite trials, as the technology "will definitely have applications in developing countries with no communications infrastructure." ☒

AT&T's ATM-over-satellite trial



An AT&T-KDD-OTC Telstra trial aims to determine and resolve the repercussions of weather- and delay-sensitive satellite links on ATM services.

GRAPHIC BY SUSAN J. CHAMPENY

SITBON/KUBEL THIOLY

Infonet adds ISDN access to TCP/IP service

Increased speed does not mean an increase in prices for local and int'l customers.

BY BILL BURCH

El Segundo, Calif.

Infonet Services Corp. this month will increase the top speed for its InfoLAN TCP/IP network service with support for access at 64K bit/sec via ISDN Basic Rate Interface.

Tailored for branch offices that don't warrant a dedicated connection, Integrated Services Digital Network access to InfoLAN is priced to be affordable for locations that need to be connected for less than three hours per day, according to Doug Loring, ISDN product manager for InfoLAN. Hourly charges are based on access point and destination.

InfoLAN is intended primarily for international companies. Current access points include Brussels, Belgium; Frankfurt, Germany; Helsinski, Finland; London; Luxembourg; and Paris. Altogether, the company plans to have ISDN access points in 18 countries this year.

Customers pay for local ISDN charges to reach an access point. Within the U.S., that local access runs around $20 per hour; outside the U.S., charges run $14 to $18 per hour, Loring said.

Infonet is pricing its end of the service at about 50% of international ISDN rates, he added. Service pricing includes installation and maintenance of routers and terminal adapters.

With the service, users also get additional functionality, compared to a point-to-point ISDN call, according to Loring, including the ability to send traffic to multiple remote local-area networks on a single call.

As for rival carriers, Sprint Corp., the other main international carrier with a Transmission Control Protocol/Internet Protocol network, doesn't yet support ISDN access.

GE Fanuc Automation Europe, S.A., a factory automation and numeric controls firm in Luxembourg, is one of the first users of the service.

The company had been using a combination of dial-up and leased lines to connect to InfoLAN but began moving to ISDN access two weeks ago, according to Willi Bos, the company's information systems manager.

Now ISDN lines connect remote users in Germany to GE Fanuc's IBM Application System/400 in Luxembourg for applications including file transfers and electronic mail. Eventually, the company plans to tie in a total of 50 remote users across Europe, Bos said.

With ISDN access, users can establish a connection to the host in two to three seconds, and synchronization between the personal computer and the host might take another 10 seconds, he said. Those short connection times give users more flexibility in how they use the system.

"Let's say you go for a cup of coffee," Bos said. "After one minute, the connection will be shut down" but can be reestablished in only six to eight seconds. "That saves a lot of connection time and money."

Another benefit is greater productivity for old 9.6K bit/sec users. "People can work four to five times faster than before," he noted. ☒

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France Telecom

*Circle Reader Service #***29**

Resell

Continued from page 29

a lightning rod for reseller disputes.

"There are consultants who comb through contract tariffs and then call resellers and say, 'Insist that AT&T give you that offer,' without even analyzing the reseller's traffic pattern," the spokesman said.

Under the Three-Letter Rule, AT&T uses the extra documentation to protect any one of its resellers from taking a customer away from another AT&T reseller without having proof of the customer's permission, said Ann Kroupa, the carrier's sales vice president for specialized markets.

The carrier is working with the Telecommunications Resellers Association to come up with a compromise on the Three-Letter Rule, she added.

An attorney for GE Exchange said the company hopes to settle the issue short of filing a formal complaint because so many orders are pending.

In pending formal actions, reseller Public Service Enterprises of Pennsylvania, Inc., headquartered in Blue Bell, Pa., has complained to the FCC about AT&T dragging its feet in provisioning Contract Tariff 516.

In addition, The Furst Group, Inc. in Vincentown, N.J., has complained to the FCC about difficulty it has had in obtaining SDN and 800 services for resale under a similar, $4 million-a-year deal laid out in Contract Tariff 374. ☒

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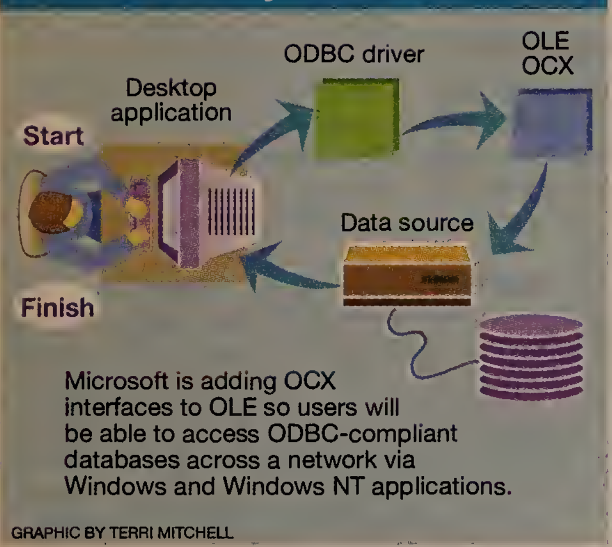
Circle Reader Service #30

The OLE way to access data



Microsoft is adding OCX interfaces to OLE so users will be able to access ODBC-compliant databases across a network via Windows and Windows NT applications.

GRAPHIC BY TERRI MITCHELL

Microsoft eyes OLE technology for its data access

BY BARB COLE

Redmond, Wash.

Microsoft Corp. is refocusing its data access strategy around its Object Linking and Embedding (OLE) technology, a move that raises questions about the future of Microsoft's widely used Open Database Connectivity (ODBC) specification.

Microsoft is developing OLE interfaces, called OCXs, that will let Microsoft's Windows-based desktop applications interoperate with SQL and object-oriented databases.

OLE is Microsoft's Windows-based facility for transferring and sharing information between applications.

Initially, OCXs will coexist with and even exploit drivers based on the company's ODBC specification, a programming interface that has become a de facto standard for database access.

"This is not an either-or situation. OLE [OCXs] will work with ODBC," said Greg Nelson, senior product manager at Microsoft.

The company said OCXs would support a wider range of data needs than ODBC, such as access to object-oriented databases. ODBC has a growing installed base, but it only provides connectivity to SQL databases.

Microsoft declined to say when the OCXs will be available.

MICROSOFT DOUBTING ODBC?

Microsoft's increased OLE-related efforts indicate that the company believes ODBC will not meet all of a large user's client/server data access needs, said Richard Finkelstein, president of consultancy Performance Computing, Inc. in Chicago.

"With OLE, Microsoft will provide a clean data access strategy that works well within its own products, and it will use that to compete in the client/server market," he said.

ODBC's future hinges on whether the OLE-centric strategy spreads beyond Microsoft products, Finkelstein said.

According to Richard Holcomb, vice president of corporate development at Intersolv, Inc.'s data access software provider, "ODBC will not disappear. It's a

See Microsoft, *page 38*

Middleware to come aboard Amtrak

BY ADAM GAFFIN

New York

Amtrak is looking to middleware to help keep its trains on track in the New York area.

Both remote procedure call (RPC) and message-oriented middleware are vital to the railroad company's planned $20 million Penn Station Control Center, which will route trains traveling between Pennsylvania and Connecticut when it goes online about a year from now.

Middleware from NetWeave Corp. will tie Unix workstation-based applications used by Amtrak dispatchers at New York's Penn Station with back-end mainframes, track switches and other railroads. The mainframes house databases containing data about every track, switch and train under Amtrak's jurisdiction, as well as its reservation system.

By using touch-screen workstations linked to a central Tandem Computers, Inc. mainframe, Penn Station dispatchers will be able to route a train's entire course, from setting trackside switches to notifying connecting railroads.

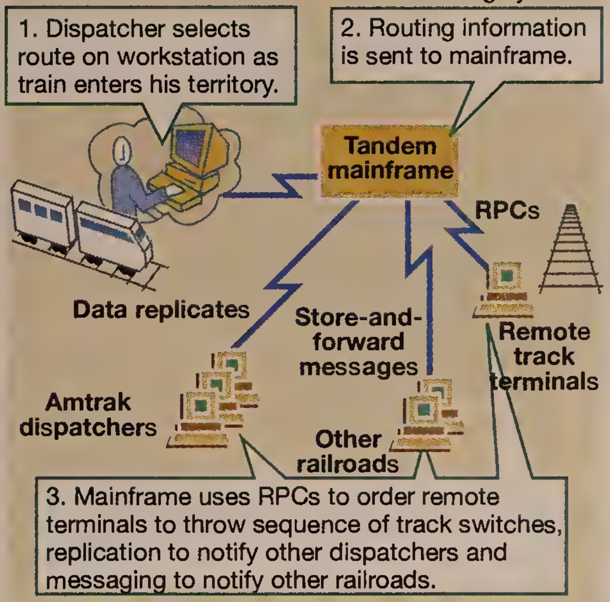
Currently, dispatchers rely on a combination of telephones, paper slips and electromechanical switches — a system that has gone largely unchanged since it was first installed in 1910.

Hundreds of trains pass through the region each day, traveling over the tracks of a number of rail lines, each of which has its own dispatching system.

Even within Amtrak, dispatchers and the railroad reservation system will use different computer systems, according to Ed Molloy, who is overseeing development of the dispatch center for Amtrak. Middleware will be used to help bind the heterogenous systems together, he said.

Networking on the railroad

Amtrak is making extensive use of NetWeave middleware to automate its railroad routing system.


1. Dispatcher selects route on workstation as train enters his territory.

2. Routing information is sent to mainframe.

3. Mainframe uses RPCs to order remote terminals to throw sequence of track switches, replication to notify other dispatchers and messaging to notify other railroads.

SOURCE: AMTRAK, PHILADELPHIA; NETWEAVE, WILMINGTON, DEL.
GRAPHIC BY SUSAN J. CHAMPENY

In general, RPCs and database replication will be used when split-second response time is vital — for example, when a track switch has to be thrown right away so a train gets onto the right track.

With RPCs, two computers establish a communications link, letting one trigger a procedure or application on the other.

Message-oriented middleware will be used when time is less important. This technology works in much the same way as electronic mail.

Amtrak selected NetWeave's Distributed Systems middleware offering, which supports both RPC and message-oriented middleware, as well as the real-time database replication that Amtrak needs to make the center work. Components of the software will reside on both the Tandem and Unix systems used by the dispatchers.

The Tandem mainframe will store a "track model" database with the status or location of every train, switch and rail section under the center's control. By using NetWeave technology, a copy of this database will be replicated to the dispatchers' workstations whenever it is updated.

When a train is about to enter a dispatcher's assigned track area, his workstation will suggest routes for the train to take. When he selects a route, the data is forwarded to the central Tandem database and then replicated to other dispatchers' workstations.

Using RPCs, the Tandem system will then order computers along the tracks to move switches into the right position.

Other railroads with which Amtrak connects will be notified via store-and-forward message of the train's route toward them. ⊒

BRIEFS

There is good news and bad news from **KnowledgeWare, Inc.**, an Atlanta **application development tool** vendor. The good news is that the firm has begun shipping a link between its Application Development Workbench (ADW) and Digitalk, Inc.'s object-oriented Parts Assembly and Reuse Tool Set (PARTS). The PARTS Wrapper for ADW lets users develop applications in KnowledgeWare's model-based ADW/Planning and Analysis tool, then break the applications up into objects that can be reused elsewhere. The PARTS Wrapper for ADW costs $3,995.

The bad news is that KnowledgeWare said it will probably report a loss for the quarter ended June 30 because of slow sales. It will not report final numbers until August, but it will restructure operations to save money.

KnowledgeWare: (800) 444-8575.

Hewlett-Packard Co. is taking aim at its Unix competition by teaming up with application development and migration firm **Bluestone** of Mount Laurel, N.J. The two companies are partnering to help users of Sun Microsystems, Inc. and Digital Equipment Corp. Unix systems migrate to HP-UX systems, or add an HP box to Sun or Digital nets. Bluestone will provide porting tools, technical support and training to users that want to port their applications to HP-UX.

Bluestone: (609)727-4600

XDB Systems, Inc. of Laurel, Md., recently released server software for connecting host- and minicomputer-based **databases** to desktop clients. XDB-DRDA server uses IBM's Distributed Relational Database Architecture protocol to handle data importing and exporting, security, job scheduling and report distribution functions between DB2 databases on mainframes and Application System/400 servers.

The OS/2-based software pricing starts at $21,000 for a 10-user license.

XDB: (800) 488-4948.

HP and OEC extend distributed application development tool kits

BY ADAM GAFFIN

Hewlett-Packard Co. last week announced an object-oriented tool kit for building applications with Open Software Foundation, Inc.'s Distributed Computing Environment (DCE).

The company said its Object-Oriented DCE/9000 will significantly reduce the complexity of DCE development through C++ class libraries that will shield developers from DCE's large application program interface (API).

DCE is middleware designed to let users run applications across heterogeneous networks.

In HP's tool kit, which is designed for building applications that run on HP-UX-based HP 9000 servers, related DCE API calls are bundled together and encapsulated into single C++ statements.

With the API, a developer would have to code each of these functions separately, said Amy Arnold, product manager for DCE and objects in HP's General Systems Division.

Elizabeth Melcher, research analyst for Gartner Group, Inc., a Stamford, Conn., consulting firm, said

See HP, OEC, *page 38*

Canadian lottery system gambles on client/server

Redesign offers app development flexibility.

BY BARB COLE

Toronto

The Ontario Lottery Corp. is taking a chance on client/server.

The company's host-based on-line gaming application system has served it well, by quickly and reliably processing ticket purchases daily from more than 7,500 retail sites.

OTTMAR BIERWAGEN

Ontario Lottery's St. Amour

But Ontario Lottery officials two years ago recognized the system's lack of flexibility and the need to start developing a new system that would allow them to more easily develop new games and better track customer information required to target sales.

"We needed modular applications that would allow us to add new games," said Reg St. Amour, director of systems development at Ontario Lottery.

"We also needed to better utilize the data we were collecting about our customers," he said.

Client/server computing will help Ontario Lottery accomplish these goals by enabling it to design a suite of applications that will be relatively easy to modify.

These applications, which will come on-line in September, will also give end users direct access to critical business information.

SYSTEM REDESIGN

Ontario Lottery's system redesign has begun by keeping the on-line transaction processing (OLTP) application for handling ticket purchases host-based.

"We didn't have faith that a [server-based] relational database would support our objective of 100,000 transactions per minute," St. Amour said.

But Ontario Lottery has turned to client/server computing to support a host of new applications. The organization is adding a suite of Sybase, Inc. SQL Server database applications, including product management, retail management, customer financial management and redemption management.

The applications are being written with Sybase's APT development tool, as well as via C programming.

The lottery organization also is implementing data warehouses to give selected departments access to specific data gleaned from the OLTP system and Sybase databases.

The data warehouses, which are still in the design phase, will be based on SQL Server and provide access to about 40 personal computer users via Trinzic Corp.'s Forest & Trees data access software.

The new system will utilize much of the existing hardware and network, but both had to be beefed up to support the new applications.

The old system consisted of 7,500 retail terminals connected to two Digital Equipment Corp. 8600 mainframes running Digital's Pathworks local-area network operating system.

The two VAX machines were connected by Ethernet cable, and end users could access them from desktop terminals.

APPLICATIONS ON THE MOVE

Under the new setup, the on-line gaming applications will be moved to a more powerful VAX 6610 mainframe supporting Pathworks, while the 8600s will be retired.

Data is now automatically extracted from the 6610 by Sybase applications running on two VAX 6610 mainframes, both of which are linked to two VAX 4600 minicomputers accessible to end users via desktop terminals.

The data warehouse applications will run on two other VAX 4600s.

The winning move

Include application, networking and operational staff in every stage of the project.

Evaluate at least three database servers, and do your own benchmarks with real data.

Build modular applications that are easy to maintain and change.

Divide and conquer. Whenever possible, break up the project into manageable pieces.

Ontario Lottery has replaced the Ethernet cable that previously linked its VAXes with a Fiber Distributed Data Interface to support the greater network traffic volume generated via the new applications.

Moving to client/server has had both its advantages and disadvantages, St. Amour said. "When it comes to performance, [client/server] relational databases have their limitations," he said.

There's a shortage of good development and administrative tools for client/server, St. Amour said.

The lack of good version control software, for example, forced Ontario Lottery to develop its own such system using Digital's code management system.

Still, some application components need to be tracked manually, St. Amour added.

Firms launch alpha version of OpenDoc

BY KEVIN FOGARTY

New York

IBM, Apple Computer, Inc. and Novell, Inc.'s WordPerfect division are hoping their vision of the future will be attractive enough to convince independent software vendors (ISV) to redesign their products from the ground up.

The three companies, along with partners Taligent, Inc. and the XSoft division of Xerox Corp., have released more than 10,000 copies of the alpha version of OpenDoc to ISVs that develop for OS/2 and Windows. A Macintosh version was delivered in April.

OpenDoc, an object distribution and communications tool, is at least 18 months from final release, but its sponsors are hoping that ISVs will begin developing products to be delivered when a final version of OpenDoc is released, said Jed Harris, executive director of Component Integration Laboratories, Inc. in San Francisco. CI Labs was cosponsored by IBM, Apple, WordPerfect, Xerox and Taligent to develop, promote and distribute OpenDoc.

OpenDoc would compete with Microsoft Corp.'s Object Linking and Embedding (OLE) object protocol as well as interact with it. Objects created in OLE 2.0 will work with OpenDoc-enabled applications when the OpenDoc code is released, Harris said.

OpenDoc is an improvement on OLE because it lets users keep more than one linked object in a document "live." With OLE, for example, you could not have a stock ticker and a clock embedded in a document and have both show changes in real time, Harris said.

OLE HAS A HEAD START

It might be a better way to handle objects, on the desktop and over a net, but it is at a disadvantage to OLE, which will have the field to itself for at least another 18 months, said Hugh Bishop, manager of emerging technologies re- search for Aberdeen Group, Inc. in Boston.

IBM needs to spell out the benefits of OpenDoc, Bishop said. "So far, they haven't been very good at that. ISVs are always hungry to deliver products their customers want, so IBM really has to go to end users to convince them."

Using OpenDoc, developers would break their code into sections, then market their products either as complete applications or as function-specific components, Harris said.

WordPerfect, for example, is planning to break its word processing application into objects, said A.J. Dennis, strategic product marketing director of WordPerfect. Users could then buy a word processor, spell-checker and grammar-checker from WordPerfect, but buy a graphics package from another vendor, rather than keeping the one built into current versions of WordPerfect, Dennis said.

OpenDoc will be built into applications so users will never have to see or think about how their objects are being linked, Harris said.

Contributing factors

Where OpenDoc's technology components come from:

IBM

SOM/DSOM object management system.

Apple

Bento persistent object store database and the Open Scripting Architecture API.

WordPerfect

Object libraries for two-way compatibility with OLE; still under development.

OpenDoc will use IBM's System Object Model (SOM)/Distributed SOM as a software bus to link various application objects into a working whole, just as a pc bus links cards and components in a PC, said Scott Hebner, program manager of object implementation for IBM's Personal Software Products division.

SOM/DSOM is compatible with the Object Management Group's Common Ob- ject Request Broker Architecture specification to link objects across nets. It lets users drag and drop objects into applications and provides live links between the objects, Hebner said.

Microsoft

Continued from page 37

programming interface, while OLE is meant for application interoperability."

ODBC's advantage over OLE now is that ODBC is a cross-platform solution, whereas OLE is limited to Windows and Windows NT, Holcomb said.

Intersolv is in the midst of porting its ODBC drivers to Windows NT, OS/2, Unix and Macintosh platforms, he added.

Users voiced concern about Microsoft's shift. "There is some concern in the development community because major projects are under way that use ODBC," said Rita Palenoff, president of the Northern California Oracle User's Group.

"On the other hand, OLE is already a standard that is widely supported, so it's not like they're introducing another technology," she said.

Microsoft's position on data access also raises questions about performance. Users have long complained about ODBC's lack of speed, but OLE can bog down network performance (*NW*, June 27, page 1).

OLE performance issues could be solved, however, when Microsoft's advanced version of Windows, called Cairo, appears in late 1995, according to observers.

Comments?

See "Contacts" box on page 2.

HP, OEC

Continued from page 37

HP is the first vendor to provide true object-oriented programming for DCE.

Melcher said there is a growing call for DCE but widespread implementation is still likely a year away. One reason for the delay is that users are waiting for more tools that can help them slice through DCE's complexity, she explained. The new tools are scheduled to ship in August, with pricing starting at $995 for the software and $2,000 for the documentation. There is no run-time licensing fee.

Arnold said the company hopes to release similar tool kits for other Unix variants and add compatibility with Microsoft Corp.'s distributed Object Linking and Embedding and the Object Management Group's Common Object Request Broker Architecture 2.0.

Meanwhile, client/server development tool vendor Open Environment Corp. (OEC) of Boston announced a technology integration partnership with Independence Technologies, Inc. of Fremont, Calif.

OEC is seeking to expand its DCE-based set of tool kits by integrating its technology with Independence Technologies' transaction monitor middleware.

MIX AND MATCH

OEC's software lets users mix and match among a variety of user interfaces, client and server software, and development tools. The company backs a three-tiered architecture, in which client, server and data management are separated. The company argues that this setup increases flexibility by allowing developers to make changes in one of the modules without having to change the other two.

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*Circle Reader Service #***39**

PRODUCT ROUNDUP

Client/server apps mgmt. tools debut at PC Expo show

BY KEVIN FOGARTY

New York

Network management and line-of-business applications were among the network-related products introduced at the recent PC Expo show here.

■ **Saber Software Corp.** of Dallas released Saber Server Manager, which provides tracking, configuration and performance optimization tools for Novell, Inc. NetWare file servers.

Server Manager lets network administrators track and tune more than 60 NetWare parameters, including communications settings, memory allocations, transaction tracking and directory cache buffers. It can display performance data in real time or in periodic reports. It runs on a Windows client and NetWare server.

Prices start at $695 per server.

The company also updated its Saber Enterprise Application Manager, a NetWare Loadable Module software metering product that eliminates the terminate-and-stay-resident (TSR) requirement of the earlier version.

The application tracks software licenses across a network, parceling out licenses as users launch applications and denying access to new users when all available licenses are in use. It notifies users waiting for an application when a license is free.

The application saves users money by making efficient use of a shared-license application, so organizations need to buy fewer licenses, the company said.

Saber: (800) 338-8754.

■ **SAS Institute, Inc.**, based in Cary, N.C., released Version 6.10 of its SAS System, a suite of decision support, project management, graphics and sales management tools that run on Win32 and OS/2.

The new version includes a Windows-like graphical interface that is consistent among the applications, support for Lotus Development Corp.'s Vendor Independent Messaging (VIM) and Microsoft Corp.'s Messaging Application Programming Interface (MAPI), as well as Microsoft's Object Linking and Embedding and Open Database Connectivity protocols.

> **Olicom's SNMP applications provide graphical representations of control buttons that can be used to configure or reset the equipment.**

The server version adds 32-bit processing for 486 and Pentium processors, and the ability to keep track of files used during SAS System sessions.

Prices range from $940 to $46,738, depending on the size of the network.

SAS: (919) 677-8000.

■ **Olicom USA, Inc.** of Plano, Texas, announced a set of Simple Network Management Protocol applications to monitor and control its line of internetworking and intelligent hub products. The applications, which ship free of charge with the products they are designed to manage, will be available in July and September.

The applications run on Hewlett-Packard Co.'s OpenView for Windows network management application. They provide graphical representation of the network and graphical representations of control buttons that can be used to configure or reset the equipment. To disconnect a network connection, for example, a user would click on an icon of the product's interface port.

The company also announced that it had signed an agreement with HP to resell OpenView for Windows.

Olicom: (800) 654-2661.

■ **Tally Systems Corp.** of Hanover, N.H., released CentaMeter, a software metering and license tracking tool to manage software over networks.

The product is designed to track when and where applications are being used, whether they are running on the network or on local hard drives.

The application keeps track of concurrent use licenses and the number of concurrent users.

It also tracks when an application is running but is not in active use, and messages the user to quit the application and make the license available.

It supports Microsoft's MAPI electronic mail protocol and works on local-area network operating systems from Banyan Systems, Inc., Digital Equipment Corp., IBM, Microsoft and Novell.

Prices start at $7.50 per personal computer.

Tally: (603) 643-1300.

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Circle Reader Service #**40**

EDITORIAL

Opportunity knocks once

Wellfleet Communications, Inc. President Paul Severino billed last week's union between his company and hub maker SynOptics Communications, Inc. as "the bold kind of move customers want to hear about."

No doubt Severino's right. Users are definitely looking for some direction on how to build virtual LAN environments. The SynOptics/Wellfleet deal plays right into users' hands, promising a suite of products with ATM at the core, along with integrated routing and switching. No other vendor today can claim to have all three pieces under one roof. Cabletron Systems, Inc. and 3Com Corp. are beholden to Fore Systems, Inc. for ATM technology, and IBM needs Chipcom Corp. for LAN switching and high-end hubs.

In effect, the deal enables Wellfleet to restore respect to routing, positioning its products as strategic hybrid switch/routers at a time when ATM switch vendors threaten to undercut them as the primary backbone device. Both companies, considered by many as market powers, consolidate a lot of technology and market clout under one financially stable roof. The so-called merger of equals combines core technology strengths that appear to be quite complementary. Wellfleet brings enormous expertise in the area of router software and a depth of experience dealing directly with large enterprise net users. SynOptics leverages its clout in the hub market, where it has done well to push the envelope with Ethernet switching and fast Ethernet technology.

Still, the impact of the SynOptics/Wellfleet deal won't be felt overnight, and competitors have plenty of time to counterattack. And therein lies the rub.

The combined SynOptics/Wellfleet entity doesn't enjoy a large window of opportunity. Many analysts suspect it will take SynOptics/Wellfleet a good two years before the merger begins paying off in deliverables based on a hybrid switching/routing/ATM platform.

The truth is, users can't wait that long. Many large shops need clear-cut paths to ATM and LAN switching today. The company needs to start spelling out the details of its architectural plans real soon.

But perhaps more disturbing is that some analysts have pointed to possible cultural differences. "SynOptics doesn't know how to save a nickel, and Wellfleet won't spend many," said analyst Paul Johnson of Robertson Stephens & Co. in *The Boston Globe*.

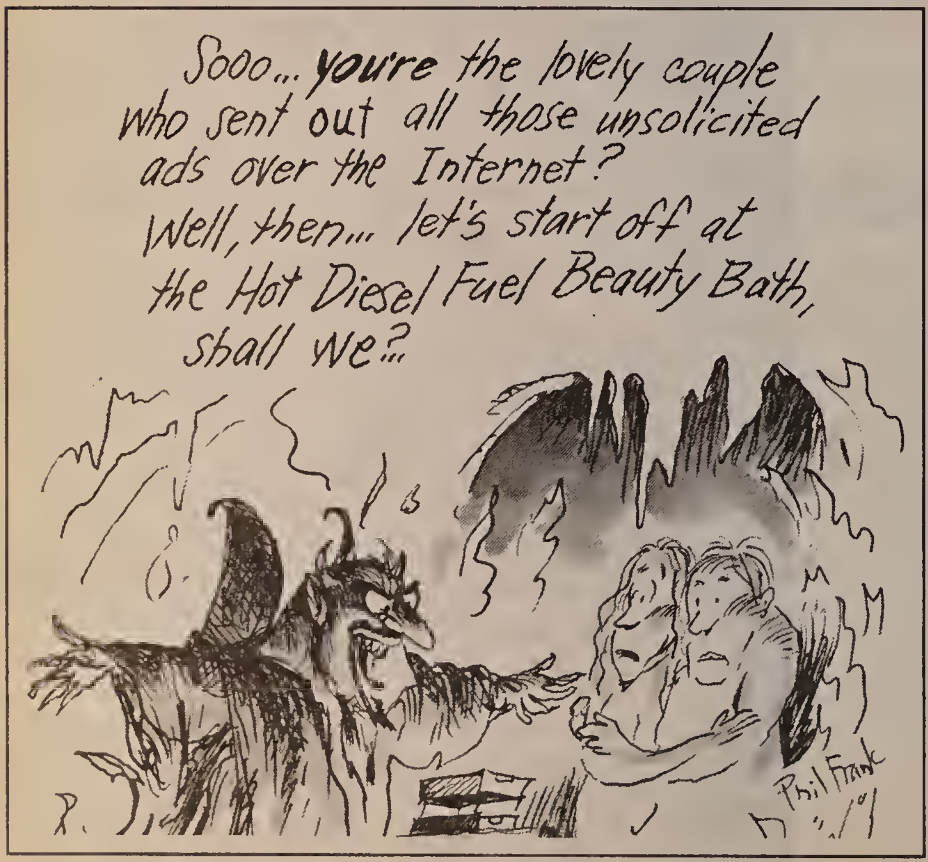
The SynOptics/Wellfleet management team can heed a valuable lesson from 3Com, which a number of years ago acquired Silicon Valley neighbor Bridge Communications, Inc. and its reputable bridge/router line.

What looked like a sure fit turned into a time-consuming exercise in carefully meshing two companies' product lines and cultures. And 3Com and Bridge Communications didn't have to span the continent. For SynOptics and Wellfleet, the window of opportunity is shrinking. The new firm needs to fill in the details fast.

➺CHARLES BRUNO cbruno@world.std.com

TELETOONS

FRANK AND TROISE


Sooo... you're the lovely couple who sent out all those unsolicited ads over the Internet?
Well, then... let's start off at the Hot Diesel Fuel Beauty Bath, shall we?
Phil Frank

NETWORK CONVERGENCE

by Mary Johnston Turner

SDN announcement signals merging of home, office

Home and office are clearly converging as laptops, networks and wireless communications make it easier and cheaper to stay in touch all the time. While many social critics rightly mourn the loss of privacy and intrusions into family life, the pressures to compress time-to-market cycles force us to continually blur the lines between home and work.

For better or for worse, this trend is unlikely to reverse itself.

A recent announcement from AT&T that would give user companies the ability to add telecommuting workers to their Software-Defined Network database and billing opens the door to yet another level of home and office convergence (May 30, page 1). In doing so, it raises several important questions.

Is your employer about to become your long-distance service provider? Will AT&T, MCI Communications Corp. and Sprint Corp. restructure corporate discounts if the client delivers specified levels of consumer traffic as part of the deal? Might employers eventually be required to provide universal access to the Information Superhighway along the lines of universal health insurance?

Reading this type of social change into a seemingly innocent announcement may seem like a stretch. However, this new, extended SDN is clearly a key enabler of a critical paradigm shift.

NEW RESELLERS

Designed to make it easier for companies to pick up the cost of telecommuting, and to also help them control that cost, this extension of software-based networks into the home means that large corporations can feasibly become important resellers of long-distance service.

Through the magic of software, it should be relatively easy to differentiate which calls are for work and which are for personal use, allowing the employer to charge back the personal calls. A related part of the AT&T announcement promises integrated SDN and Internet access, so employers can also become a key means of providing ubiquitous information services connectivity.

Private-label phone and internet-type services could quickly become a profit center for large corporations. Corporate network managers can negotiate deep discounts with the carriers and resell at a markup to employees, while still offering the employees a discount over the consumer list price for the same services.

Just as employers are important sales channels for health insurance, life insurance and mass transit passes, they could quickly use these new SDN capabilities to become sales channels for long-distance voice and data services.

While at first glance this might sound like bad news for carriers because it will drive down the average revenue per call, think again. The current long-distance advertising wars cost the top three carriers a collective $253.8 million in the first quarter of 1994, according to *Competitive Media Reporting*. That's an annual rate of more than $1 billion.

And each carrier spends even more to cover the fees involved in changing a customer from a competitor's service to its own service. Customer retention is difficult at best as some customers routinely respond to this advertising bombardment by hopping from carrier to carrier. The current consumer long-distance wars are fought hand-to-hand in the trenches and are not going to get less bloody until the rules of combat are changed.

Enter large corporations, universities and government agencies as marketing channels. If a consumer's telephone — and data or even video services — are tied into employer networks, the churn rate is likely to drop substantially.

The need to support telecommuting — for environmental and political reasons as well as the pressures of the business world — will force the employer to be concerned with the employee's phone and data service. Why not add a perk of discounted personal long-distance voice and information access, as well?

To make collections easy, the cost of personal communications could be deducted directly from the employee's paycheck.

In this new world, carriers would dramatically reduce their mass market advertising (much to the chagrin of Madison Avenue) and focus instead on their large account relationships.

Instead of creating the latest high-tech ad, dollars could be put toward developing value-added services that are of use to that particular employer or so-called affinity group — groups of individuals with common interests.

For example, a university might sponsor a non-employee affinity service by offering discounted long-distance service to alumni and include access to alumni electronic bulletin boards or even pay-per-view access to university football games over the soon-to-be-available video dial-tone services.

Many marketers already recognize the growing role of affinity groups. The American Association of Retired Persons (AARP) has become a major affinity group, for example.

It is only a matter of time until long-haul carriers look for a way out of their current advertising wars. Their need to take a different approach to marketing is dovetailing nicely with new technological capabilities such as AT&T's expanded SDN offering. Both these trends marry up with corporate needs to extend the corporate communications infrastructure into the home and to keep down the spiraling cost of information technology.

It's likely that an innovative user will be the one to put the pieces together.

If you are looking to turn telecommunications into a revenue generator, intend to promote work at home and believe your employees might appreciate discounted long-distance service, ask you carrier about the options. (It is likely that only the largest companies will be able to cut these types of deals initially.) Entering the long-distance affinity sales market could be the beginning of a whole new role for corporate telecommunications.

➺Turner is a principal with Northeast Consulting Resources, Inc., a Boston-based consulting company. She can be reached at (617) 654-0619 or via the Internet at turner@ncri.com.

TELECOM REGULATION

by Peter Marx

Info providers welcome Bell competition

As the debate over the Information Superhighway heats up in Congress, there have been suggestions that the companies providing the information that rides on the superhighway want protection from the regional Bell holding companies, which want to offer new lines of service. This is a myth that should be put to rest here and now. The fact is that most information services providers believe increased competition is in both their own best interest and that of network users.

Last year, my company conducted a survey of executives from more than 300 information services companies — firms that include software and print publishers, database providers, on-line service operators and information syndicators. These are the pioneers that have been developing the information resources, technologies and applications that users are demanding even before the Information Superhighway is constructed.

The results of the survey show that the vast majority of information providers agree not only that the RBHCs should be free to continue offering information services, but that they should be unfettered from decade-old prohibitions and allowed to compete in long-distance services, cable television programming and telecommunications equipment manufacturing.

This survey confirms what a *Network World* survey revealed about telecommunications users in general last fall (Oct. 25, 1993, page 1). Together, these surveys represent the first efforts to quantify opinions within the industry on the major issues in which information services providers will be key players.

The RBHCs would offer information services pioneers seeking to merge onto the Information Superhighway four important benefits: greater resources and capital; new partnership opportunities; new technologies; and more mass-marketing capabilities.

These benefits will help information services companies to provide new and better services for users.

Moreover, RBHC competition in long distance would result in lower long-distance rates — which will also cause information services rates to drop, since long-distance costs represent a significant percentage of information services costs. This is also good news for users.

Unfortunately, if the Communications Act of 1994 (S.1822) — currently being debated in Congress — passes as is, network users and information services providers will lose the opportunity to achieve these benefits. The bill currently includes new barriers to entering long distance — so-called entry tests, loss of state authority to regulate in-state long distance and the implementation of harsh regulations for those RBHCs that manage to clear the other hurdles.

In addition, the bill fails to recognize the need for information services currently developed and available only to limited groups to be deployed on a widespread basis. Telephone companies should not be barred from making telemedicine (providing medical services and advice to patients at home through telecommunications rather than in a clinic or hospital) or distance learning services available to Americans on a regional or national basis. Yet, the bill would not grant incidental inter-local access and transport area relief — relief from the long-distance ban in cases where long-distance services are incidental to, but vital for, the provision of another service.

Fortunately, S.1822 can be fixed. Sen. John Breaux (D-La.) has introduced a bill, S.2111, that would level the playing field for all telecommunications participants. S.2111 calls for lifting within about 12 months the barriers to competition in all telecommunications markets — including local, long-distance and cable TV service — at the same time.

If S.2111 were to be merged with S.1822 — which is Sen. Breaux's objective — the final bill would be one of the strongest pieces of consumer legislation passed by this Congress.

Moreover, it would push many of the dreams of information services pioneers and forward-thinking network users onto the fast track toward reality.

Those on the cutting edge of the information age know that the time has come to loosen the shackles from the RBHCs; to allow competition in long distance, telecommunications equipment manufacturing and cable TV; and to open up more avenues — not fewer — for providing information services. It is important for us to remind our legislators that open competition is the best method for paving the way to the Information Superhighway.

Marx is chairman of The Marx Group, a law and consulting firm in Wellesley, Mass. He can be reached at (617) 235-2888.

Letters

Editorial on target

Your editorial concerning training of vendors was right on target (June 13, page 42).

It really hit home the points that vendors have to train the sales and support staff to enable them to become better prepared to deal with customers.

In fact, we have secretly been helping some of the largest companies, regional Bell holding companies and interexchange carriers fill this void for the past 10 years.

For training, most companies believe that the more technical the details we can pour into the participants, the more proficient they will become.

However, we recently began some case studies and customer simulations that let the participants work with a real-life "simulated" customer (with role playing, but in a positive, reinforcing, learning situation).

What we discovered was that a participant could look at a data link frame and tell what the parts were on an information scope, but not have a real discussion about business issues driving technology shifts, which in turn were dictating networking and computing platform choices.

In other words, they could pass a technological test — but not discuss business applications and their related internetworking choices (for example, gateway vs. Transmission Control Protocol/ Internet Protocol).

Hopefully, our simulations have started changing this somewhat skewed perception in the area of training.

It's great to have folks come in saying that they really don't need this — and then leave saying this was the greatest part of any training program. This has been a real eye-opener.

Phillip Schuman and
Oliver McClellan
OmniTech Consulting Group
Chicago

Deals on wheels

I was very interested in your article "Car dealer markets automobiles on-line" (June 6, page 15). I was wondering if you could print the company's Internet address and whether they allow for an anonymous, guest logon. Thanks.

Alex Puatu
Project manager
Network Systems Group
Schaumburg, Ill.

The "virtual showroom" can be accessed via the Internet's World-Wide Web at http://www.freerange.com/rood/disc.html or http://www.dealernet.com/.

To log on anonymously, type anonymous *at the logon prompt and use your electronic mail address for the password.*

Interesting fact

In your Buyer's Guide to LAN management tools (June 6, page 48), you had an interesting factoid from Forrester Research, Inc. on MIS department costs per users and what portion of those costs is LAN administration.

The reason why this factoid is interesting to me is that I'm a network manager for Raytheon Co.'s Equipment Division. For years, I've been preaching to my upper management that we're spending much less on MIS support than the industry average. We're running about $650 per user and probably about 20% or less of that on LAN adminis-

See Letters, *page* 50

Letters must include your name, title, company, city, state and a daytime phone number for verification. All letters are subject to editing for space and clarity. Letters may be sent via the Internet to network@world.std.com; via fax to (508) 820-3467; or by mail to Editor, *Network World*, 161 Worcester Road, Framingham, MA 01701.

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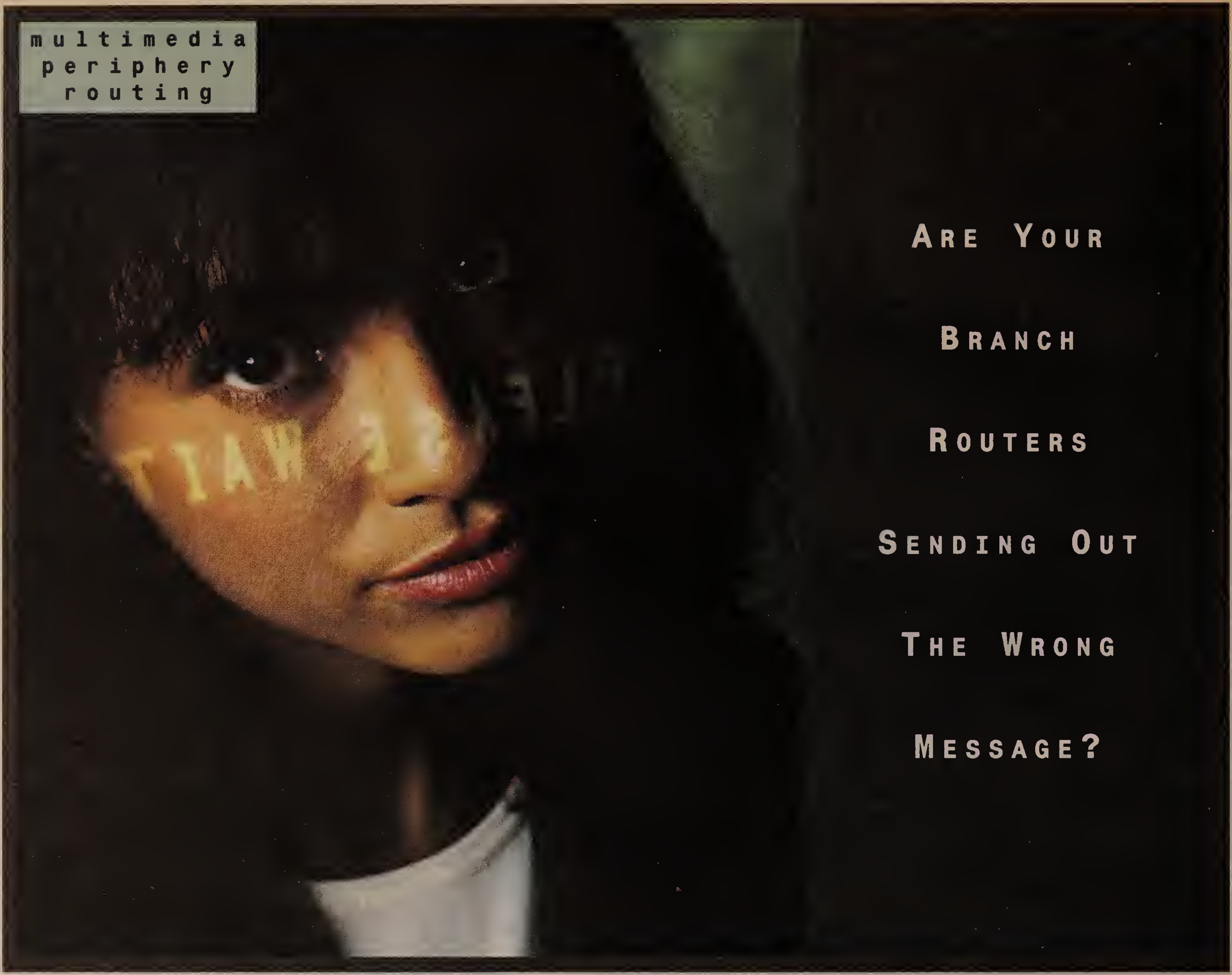
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Circle Reader Service #41

ProShare brings PC users face to face

NETWORK WORLD TEST ALLIANCE

Although getting the requisite ISDN service may be difficult, Intel's videoconferencing software is a boon for PC users who need to communicate and share data.

By KRISTIN MARKS

Organizations looking for PC-based video and document conferencing tools to bridge the geographic divides that often separate employees have someplace to turn. We recently spent some time using Intel Corp.'s ProShare Personal Conferencing Video System 200 product and were quite impressed with its capabilities. Its interface is close to impeccable, and the documentation, which isn't even needed, is easy to read. The hardware, in turn, is well designed and a snap to install.

But even though there's a lot to be excited about, users need to be aware of some shortcomings and problems. Intel will, over time, refine the video quality, but other problems, such as access to the requisite ISDN service, will require the cooperation of the phone companies.

We'd use ProShare all the time if we could, and we suspect that many other organizations would, as well. ProShare provides a way for personal computer users in geographically dispersed offices as well as for the growing ranks of telecommuters to share documents and carry on face-to-face meetings. Used wisely, it has the potential to let organizations reduce travel budgets and increase employee communication and productivity.

Unfortunately, the infrastructure necessary to support desktop videoconferencing isn't in place yet. ProShare requires an Integrated Services Digital Network line to carry on a videoconference, and this is where many potential users will confront their first obstacle. Getting this digital phone line isn't necessarily easy, as our experience indicates.

We went to three different states in the Northeast before we got a line, finally ending up at OmniTech Corporate Solutions in Teaneck, N.J., a systems integrator specializing in communications for the corporate market. Rumor has it that getting ISDN is easier in other parts of the country. (Maybe New York isn't the center of the universe after all.)

NET Result

Product:

Intel ProShare Personal Conferencing Video System 200

Key findings:

- Offers an intuitive interface.
- Obtaining the requisite ISDN service may be difficult.
- Video image is not perfect, but it is quite tolerable.

System requirements:

- 486 running at 33 Mhz
- 8M bytes of memory
- 7M bytes of disk space
- DOS 5.0 or higher
- Windows 3.1 running in enhanced mode
- Windows display driver with a 640- by 480-pixel screen resolution

Vendor:

Intel Corp.
5200 North Elam
Young Parkway
Hillsboro, Ore. 97124
(800) 538-3373

Price:

$2,499 (includes camera, earphone/microphone combination piece, video digitizer and ISDN board)

Intel is doing its part to alleviate these difficulties. It has forged strategic alliances with the regional Bell holding companies to help speed nationwide deployment of ISDN technology. In addition, users who face resistant phone company representatives — ours laughed at us when we asked for an ISDN line — can call the Intel ISDN Connectivity Information Center's 800 number to find out if ISDN is available in their area.

Users simply need to give their area codes and the first three digits of their phone numbers, and Intel will tell them if their central office supports ISDN. Users who live in Bell Atlantic Corp. or Pacific Bell territory have the best hope for ISDN connectivity, while NYNEX Corp. customers have very little chance of obtaining it.

Users who get by this first hurdle must order the Intel Blue version of Basic Rate service. Sites may want to consider ordering the ISDN Ordering and Provisioning document (Document 8101) from Intel's FAXback system by calling (800) 525-3019. This document gives every detail of the specification and is worth ordering for the glossary of terms alone. It also has detailed instructions for placing an ISDN order.

Then, of course, there's the pricing. We know of one firm that waited two months before its ISDN order was fulfilled. When it was, the price was twice the original quote.

ProShare also requires a Network Termination Type 1 (NT-1) box, which, as far as the phone company is concerned, serves as the ISDN line's termination point. As far as ProShare is concerned, it's simply the box that the ISDN card is plugged into. NT-1 boxes also allow the phone company to provide line maintenance and loopback testing.

Pricing for NT-1 boxes are not uniform. For instance, Northern Telecom, Inc. offers one for $130, while AT&T's costs $328. The Intel FAXback document (Document 8109) contains NT-1 ordering information.

PACKAGING THE GOODS

ProShare is well put together right down to the packaging. It arrives in a fat briefcase-style box, complete with a handle. The small swivel camera (for mounting on a PC monitor), which comes with industrial-strength Velcro to keep it in place, plugs into a video digitizing 16-bit Industry Standard Architecture board. This camera relies on simple mechanics for its operation. Opening the lens door turns the camera on, while closing the door shuts it off. It's that simple.

Intel also provides a phone cable for connecting the ISDN card to the NT-1 box.

The microphone is built into the speaker, which fits inside an ear comfortably. Users can also clip it to their clothes — just as newscasters do. A small holder attaches to the side of a monitor, providing a place to store the earpiece. The earpiece cable splits in half so it can be plugged into the back of a second 16-bit card that handles the ISDN connection.

> Even though there's a lot to be excited about, users need to be aware of some shortcomings and problems with ProShare.

The plugs have Macintosh-style icons on them to identify the port connections. And there are other useful touches, including cable ties to keep desks free of cable clutter and a screwdriver for installing the hardware.

We found the software installation for this Windows application a little more troublesome than we would have liked. During the installation, we were warned that we needed a 256-color driver for our video card. The documentation also mentions this requirement, which may pose problems for many users, who typically buy preconfigured systems and do not have access to their video display card's driver diskette.

We spent an hour and a half looking for the video card driver in the PC we used for testing — an Intel 486 DX/66 with a fairly standard ATI Technologies, Inc. video card. CompuServe subscribers can download from the Microsoft Library a high-speed 256-color display driver, SVGA256.DRV, which supports most nonaccelerated Super VGA cards with 1M byte of memory. We hope that in the future, Intel will distribute this driver on the ProShare installation diskettes or that Microsoft Corp. will include it with future operating system releases.

We were impressed with how well ProShare

Continued on page 48

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They cost the same. The
You call the 800 number at com
Hmmm. What to

The call goes to Company B, of course. As well as the sale. And the next sale, too.

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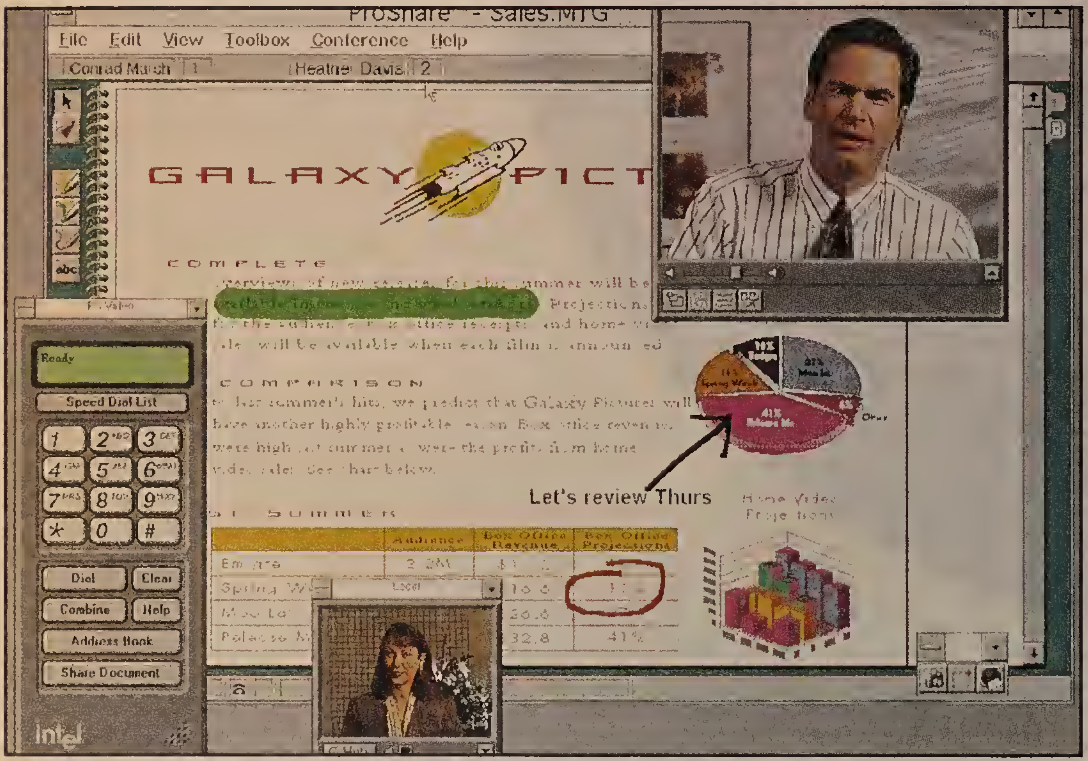
Continued from page 45

worked. As part of the installation process, it places an icon — a resident program — in the Windows start-up group so that users can receive calls. Without this icon, users will have to keep the application open in order to receive calls. Three other icons — Diagnostics, CPU Utilization and Configuration — appear on the Windows Control Panel. By default, ProShare uses 75% of a CPU's power when running.

When ProShare fields an incoming call, the computer rings, although users can substitute .WAV files — standard format sound files — instead. A small pop-up window indicates that someone is calling and allows users to accept or decline the call. Users who have caller identification will also be able to see the number of the caller in the pop-up window.

> All in all, video quality still leaves a lot to be desired— not just for ProShare, but for all products in this market.

By clicking on the Accept button, users launch ProShare. The monitor's display is then divided into three regions. In one area is the handset, which looks like a car phone with numbered keys for dialing and an LED look-alike screen that displays dialed numbers. It even has little gray lines at the bottom to represent a phone speaker.



A graphical representation of a handset allows users to dial phone numbers while the local and remote video windows show the videoconferncers.

The remaining windows are for local and remote video. The local video is activated when the camera door is slid open, enabling users to determine if their camera is pointed at them or if it has slipped out of position. The remote video screen shows the person on the other end of the call. These two video display areas can be sized — either as a small 160- by 120-pixel display or as a large 320- by 240-pixel display.

Cameras can provide two views — a wide-angle and a close-up head shot. Users can toggle between these views by clicking on the Zoom button.

We found that our video image lost a little sharpness when we enlarged the display areas, but it was still preferable to the smaller screen. If memory runs short, for instance, when other applications are running, users may find that their local video window is automatically minimized when the remote video display is enlarged.

All in all, video quality still leaves a lot to be desired — not just for ProShare but for all videoconferencing products in this market. ProShare runs at between 8 and 12 frame/sec, although its stated rate is 15 frame/sec. In contrast, a TV monitor operates at 30 frame/sec.

When we turned on the local video, we experienced a delay — about 100 msec — between the time the camera recorded our movements and the time the image was projected on the screen. This had a disorienting effect until we got used to it. Of course, users can avoid this by looking only at the person they are speaking to. Although we couldn't see subtle changes in facial expressions at this frame rate, we could see certain conversational indicators such as yawns, rolling eyes and, yes, even grimaces.

The good news is that the video rate drops to preserve audio flow and prevents the *Godzilla* movie syndrome. In our trials, lips and voice were fairly well matched. External speakers can be hooked up for speakerphone calls, but the result is disappointing as the communication drops to half-duplex mode. This means that speakerphone users have to wait at least five seconds after hearing the last sound from the speaker before talking. Otherwise, the first part of the sentence won't be heard on the other end. As a result, conversations become halted and stifled. This is not an issue with the earpiece-microphone set.

The performance of ProShare remained fairly high during our tests. We changed lighting, incorporated bodily movements into our conversations, shared documents and launched other applications while videoconferencing.

The camera tolerated light changes quite well. It even handled our umbrella test — while holding an umbrella over the head one of our conferencers the quality of the picture was not noticeably diminished. And even when the picture quality was affected, we were able to compensate with brightness, contrast and saturation controls.

We also looked at how ProShare dealt with quick bodily movements. We flailed our arms and moved our head quickly but were pleased to find that there were no color trails resulting from these movements.

However, when we pumped a great deal of data through our CPU — like when we launched other applications — the video temporarily froze and reversed palettes. Once the CPU utilization decreased, the video returned to normal.

ProShare also includes other useful features, such as speed dialing, which remembers the last 32 numbers dialed. Intel uses something called Smart Dial, which automatically translates letters into numbers so users don't have to convert someone else's mnemonic device. Smart Dial also inserts the appropriate access codes — 1 or 9, for instance.

ProShare's Address Book lets users maintain a phone directory and can be shared with Intel's FAXability software. For those who cannot remember names, ProShare's Address book accepts snapshots, which can be captured from live video. The address book also contains all the numbers for Intel technology support, including international numbers.

The documentation is clearly written. Frankly, though, it's not really necessary. ProShare is so intuitive that users are better off without the manual, although it does contain some useful videoconferencing tips.

> ProShare is so intuitive that users are better off without the manual, although it does contain some useful tips.

For instance, the documentation suggests wearing appropriate wardrobe (don't wear stripes), keeping an uncluttered background and setting up in good light.

Audio and video mute buttons allow users to put their conversations on hold for a few minutes. When the video mute button is clicked on, the screen goes black and red letters indicate that the call is on hold, making it clear that it's not some kind of technical glitch.

Videoconferencing can be fun, especially for first-time users. But at the same time, it can be used for real work. ProShare includes a document conferencing component, which Intel calls the Notebook. In fact, it looks just like a notebook, right down to the spiral binding on the left side.

Both users can edit, cut, paste and save notebook pages. New pages can be added by clicking on the page tabs. Users can employ different color markers to draw on this "whiteboard" space. We pasted a picture of a magazine cover in the notebook and used different color markers to embellish the face on the cover. Of course, there are probably more productive tasks that can be accomplished with this Notebook.

The notebook has both public and private areas so users can keep confidential notes about meetings. Public notes are saved in files with .MTG extensions, while private notes are saved with .PRV extensions.

ProShare also includes a Jump Start feature, which allows a user to initiate a videoconferencing session with another user who doesn't have ProShare. The recipient of the call does, however, need a communications package that offers a Wait For Call feature. When the caller dials into the remote system, ProShare downloads enough software to support a videoconferencing session. Of course, recipients won't be able to initiate any calls. And without a camera, their smiling faces won't be visible. But as long as they have at least a 14.4K bit/sec modem, they will be able to document conference.

This version of ProShare did not have application sharing, but the next release should. Application sharing will allow both local and remote users to work on the same document with the application of their choice — even if only one user actually has that application. The interface is shared over the ISDN line, but the application license agreement is not broken because the application is running on only one CPU.

We have only one suggestion for improvement of the user interface. We'd like to see it get some sort of on-line description of some of the buttons and menu options, perhaps a drop-down help box that appears when users point to — but don't click on — an option.

ProShare is a robust application. It whetted our appetites, but our videoconferencing hunger is not yet sated, nor will it be until all the phone companies make ISDN available. When this happens — and we hope it's soon — videoconferencing will receive greater play.

Imagine, business cards will be even more cluttered with voice, facsimile, electronic mail and ISDN videoconferencing phone numbers printed on them.

➜ Marks is managing director of Networks Are Our Lives, Inc., a consulting firm based in Red Hook, N.J. She can be reached via E-mail at 72240.424@compuserve.com.

HOW WE *did it*

Our testing took place at OmniTech Corporate Solutions, Inc. in Teaneck, N.J. We installed the software on an Intel Corp. 486 DX 66-MHz system with local bus video running Windows 3.1 and DOS 6.2. Our system was outfitted with 16M bytes of RAM. Although users can assemble their own camera, speaker and microphone, we used the components provided in the package. We had Novell, Inc. NetWare Open Data-Link Interface drivers as well as cc:Mail, Lotus Notes and a variety of Windows applications — none of which affected performance. The ISDN line was provided by Bell Atlantic Corp. through an NI1 switch.

Calling all...

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Network World invites you to participate in a product survey for an upcoming Buyer's Guide on remote LAN access products. If you'd like to receive a survey form, please call (800) 622-1108, Ext. 461, and leave a message for Cheri Paquet, assistant editor, or Barbara Wierzbicki, Buyer's Guide editor. Be sure to include your voice and fax numbers when requesting a product survey. Vendors must contact *NW* no later than Aug. 1 to receive a survey form.

Network Innovators

Give **Randy Bush** *a few modems and dial-up circuits, and he plugs the world into the Internet.*

Profile

BY GENE MESHER

Preoccupied with the Information Superhighway debate, it's easy for users to overlook the back roads of the Internet that link multinational corporations to South America, Africa, the Caribbean and other exotic destinations.

But Internet traffic does find its way to those sites and more, thanks in large part to master road builders like Randy Bush. From his Portland, Ore., home, Bush runs Pacific Systems Group, a nonprofit company dedicated to linking developing countries to the Internet via store-and-forward electronic mail and dial-up bulletin board systems.

According to Jagdish Parikh, network planner for AsiaLink, a Unix to Unix Copy Program (UUCP)-based net linking a coalition of South and Southeast Asian nongovernmental organizations, Bush is "a network missionary who will do everything possible to help those eager to communicate with each other."

The links Bush has forged abroad may help companies communicate with suppliers or remote offices in regions where sophisticated leased lines and data services are rare.

Titles: **Senior network engineer at Pacific Systems Group and senior network engineer at RGnet, Inc.**

Innovation: **Extending the Internet to third world nations via low-cost dial-up connections.**

Day job: **Lead engineer for RGnet, an "IP Dialtone" supplier in Oregon and Washington.**

Fringe benefit: **The opportunity to try all sorts of wonderful foods.**

Favorite computer snacks: **Chocolate smuggled from Switzerland, fake mango juice (not as good as the real thing) and mud-thick medium-roast coffee.**

FAVORS FIDONET

This connectivity is made possible by PSGnet, which provides a unique link between the U.S. portion of the Internet and the scientific and research electronic mail networks in a number of countries around the world (see graphic). These nets typically use Unix-based UUCP and MS-DOS-based Fidonet protocols.

PSGnet users dial into Bush's Ethernet network, which serves as the host for a hodgepodge of computers running Sun, Xenix and BSD versions of Unix with MS-DOS and Macintosh OS systems. These systems act as store-and-forward E-mail hosts.

Currently, PSGnet serves as a gateway to the Internet for about 10,000 Fidonet messages a day, making it the largest Fidonet/Internet gateway in the world, according to Bush.

In Bush's view, this is a critical period for building networks in developing countries for two reasons. First, data transmissions are still so new that post, telegraph and telephone administrations in developing areas haven't reacted to them with special rate structures. For now, data transmission is still relatively inexpensive.

The second factor favoring the development of networks is that basic store-and-forward E-mail facilities are so revolutionary in developing regions that they satisfy local demand for networking connectivity for the near future.

"If I can get the 'thinnest' of wires into a developing area, about $100 per month in long-distance costs provides real utility," Bush says. "Once it is in place, users start joining and the local network takes off by itself. Three years from now, network users in developing areas will want programs like Telnet, ftp and other on-line facilities." At that point, start-up costs will increase to about $5,000 to $10,000 per month because such networks will require leased lines instead of dial-up facilities, making it much more difficult to get new networks started.

For that reason, Bush has set up the Network Startup Resource Center (NSRC), with support from the National Science Foundation. The NSRC was created to provide technical assistance to people setting up networks in developing areas. For areas in which there is currently no network access, he will send tools and books by post. For those that have net facilities, the NSRC offers assistance to groups via E-mail, and PSGnet also has its own Gopher and ftp site to make information accessible.

There were no formal net links out of the Republic of Peru in December 1991, and no connections between commercial institutions within Peru. The first step was to lobby support among a broad spectrum of groups for a Peruvian national network.

Then, the United Nations Development Program issued a small grant for basic networking equipment and for Bush and Ted Hope of Project Huracan in Costa Rica to travel to Peru to help set up the new network. The idea was for Bush and Hope to 'parachute in' — set up the equipment and leave. Bush disagreed strongly.

Bush country

Partial list of countries served by PSGnet:

- Argentina
- Australia
- Germany
- Hong Kong
- Israel
- Japan
- The Netherlands
- Peru
- Poland
- Singapore
- Taiwan
- Thailand
- The U.K.
- Zimbabwe

"I don't believe in the 'parachute drop' theory because it breeds the 'Monday-after' syndrome, which produces the 'Who was that masked man?' effect," Bush says.

Instead, Bush focused on thoroughly training Peruvian engineers to use and understand the networking equipment, which consisted of an 80386 Unix computer, three Intel Corp. V.32bis modems — two connected to dial-up lines, and a third in reserve as a backup — and one Telebit Corp. modem for international connections.

Once trained, the Peruvian engineers and Bush focused on linking up various subnets to the central node of the network. That done, the team linked the Peruvian network by dial-up line to Bush's PSGnet in his Portland home. By January 1992, 40 nodes had been established. Today, the Peruvian network includes more than 200 institutions and many times that number of nodes. Peru's network will soon upgrade from UUCP to Transmission Control Protocol/Internet Protocol and use a leased line linked to PANAMSAT and downlinked to the Internet through an earthstation in Homestead, Fla. About 5,000 messages are exchanged a day with Peru through PSGnet.

Bush also played a role in the development of South Africa's network, to date the most extensive on its continent. It began in 1988 when Bush met Pat Terry, the head of the Computer Science department at South Africa's Rhodes University. During the encounter, Terry asked about using E-mail; Bush gave him a Fidonet disk to take home.

"Pat is a bit of a hacker, so he took the disk back and fiddled with it until he got it to work," Bush says. Helping a South African was something of a controversial step in those days, since this all occurred before the Nationalist Party vote that unseated President Botha. "I had a serious talk with my lawyers before letting my net act as the gateway for their E-mail. Soon after, other university officials asked for help to start a general electronic mail service for their university. So, we tweaked the Fidonet software so that it transparently gated mail into their Cyber mainframe."

Today, a true Internet exists in South Africa called UNINET.ZA, along with a recently established commercial IP network, called TICSA.

The network has also been extended far beyond the boundaries of South Africa into many neighboring countries, including Botswana, Lesotho, Malawi, Namibia, Swaziland, and most recently, Angola.

EQUITY PARTNER

PSGnet is also involved in two other networking efforts closer to home: RAINnet and K12net. RAINnet, the Research and Information Network, is a Portland-area medium distance experimental network that uses SLIP connections to link small Unix machines.

And, K12net is an international Fidonet-based network, which Bush had a hand developing; it now has 550 nodes in 19 countries. Janet Murray, who accesses the Internet through PSGnet, is very enthusiastic about Randy's support for her project.

"Randy is the best," Murray says. "He is very devoted to equity of information."

➙ Mesher is a free-lance writer in Phoenix.

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Help desk

Continued from page 2

International switched ISDN service is, indeed, much more expensive than domestic ISDN. Unfortunately, ISDN is available only to Japan. The only other digital services that will support video teleconferencing to your international locations are lease channels via dedicated satellite or undersea fiber-optic cable.

However, lease channels would be very expensive to provide for the 48 hours per week that you intend to spend for video teleconferencing. For example, a 128K bit/sec dedicated lease channel from New Jersey to Osaka (one of the least expensive channels) on a one-year minimum contract would cost about $18,940 per month. If you add in the local line charges, terminal equipment charges and taxes, your total monthly costs for the 128K bit/sec channel would be about $20,000. Based on 48 hours per week of usage, the cost per minute would be $1.74 ($20,000 divided by 11,520 minutes).

Unfortunately, at this time, video teleconferencing to your selected locations does not prove to be financially practical.

I would like to contact the Telecommunications Resellers Association (TRA) mentioned on page 28 of *NW*'s May 16 issue. Can you provide the name and phone number of someone at TRA?

Donna Farchione, Laguna Hills, Calif.

David Rohde, *NW* senior Washington correspondent, replies: The executive director of TRA, Ernie Kelly, can be reached at (202) 429-6601 in Washington, D.C.

PRODUCT UPDATE

In our May 23 (page 2) column, we named some products that allow users to configure Windows workstations on a local-area network to communicate with AT&T's StarServer.

We mentioned that once the Windows workstations are talking to the StarServer, the least expensive way for Microsoft Mail and WordPerfect Office users to communicate would be to use the Simple Mail Transfer Protocol (SMTP) gateway products from WordPerfect Corp. and Microsoft.

We neglected to say that you must first upgrade each Windows for Workgroups' mail post office to a full MS Mail post office using the Post Office Upgrade for Microsoft Windows for Workgroups. Once you upgrade the post offices, you can use the SMTP gateways from both vendors.

Letters

Continued from page 43

tration. I showed them the Forrester caption, and they seemed very interested in it. They asked me to find out more.

Your article didn't get much into the business aspects of managing a corporate local-area network.

Do you know of another article on this subject or can you refer me to the person within Forrester Research that has more backup material on this?

I would appreciate any help you can give me. Thanks.

Peter Moscatelli
Network manager
Raytheon Co.
Sudbury, Mass.

Editor's response: The figures are from Forrester Research's October 1992 Network Strategy Report titled "The LAN Money Pit." To obtain a copy, call Forrester Research at (617) 497-7090.

In addition, you may want to check out NW*'s annual budget survey (June 20, page 51), which examines where and how users are spending their network dollars.*

IBM out of touch

Regarding your special issue "IBM Network Update" (June 13, page 47):

I am of the opinion that at this point IBM is rather hopeless — an organization not at all sure of itself. To think it took them a year to come up with their glorious "vision."

All you need to do is look out the window to know which way the winds are blowing — and indeed, they are winds of change.

IBM needs fewer products that are more feature-rich, less middle-of-the-road and bordering on the best of breed rather than competitors to one another.

Arthur Tisi
Chief information officer
Metropolitan Museum of Art
New York

Taking sides

Regarding Bruce Jenkins' letter about Mark Gibbs' hacker column that implies Gibbs was blaming the victim (June 20, page 55):

Although I can see valid points for both sides of this issue, and think it would be nice to live in Bruce's world where you don't have to lock your bike, I have to side with Gibbs.

Gibbs' comment about people not bearing responsibility for their actions is true; just look at the Menendez brothers' trial. It seems that no one is taking the blame for their actions.

Good article, good response.

Tony Podrasky
Systems support engineer
Convex Computer Corp.
Richardson, Texas

Contact needed

Your article "Firm links disparate mail systems" (June 6, page 35) was very interesting. But there was no information provided about how to contact the firm, Infonet Services Corp.

Could you provide a telephone number and/or E-mail address so that I can obtain more information about their product? Thanks.

Casey Coleman
Senior programmer
Arrington Travel Center
Chicago

Editor's response: Contact Robert Grosso, Infonet sales manager, at (310) 335-2600 or via the Internet at grosso_r.@infomail.infonet.com.

Not a sin

I appreciated Mark Gibbs column "Federal Express and the seven MIS sins" (June 20, page 32). I agree that client/server technologies are generally able to run enterprises. The question is whether organizations (specifically, IS departments) can implement and run these technologies successfully.

Sins are indigenous to people, not machines, and I am gratified that Gibbs has made this point in the press. I look forward to his next column.

David Falter
Managing director
Logic Plus, Inc.
Chicago

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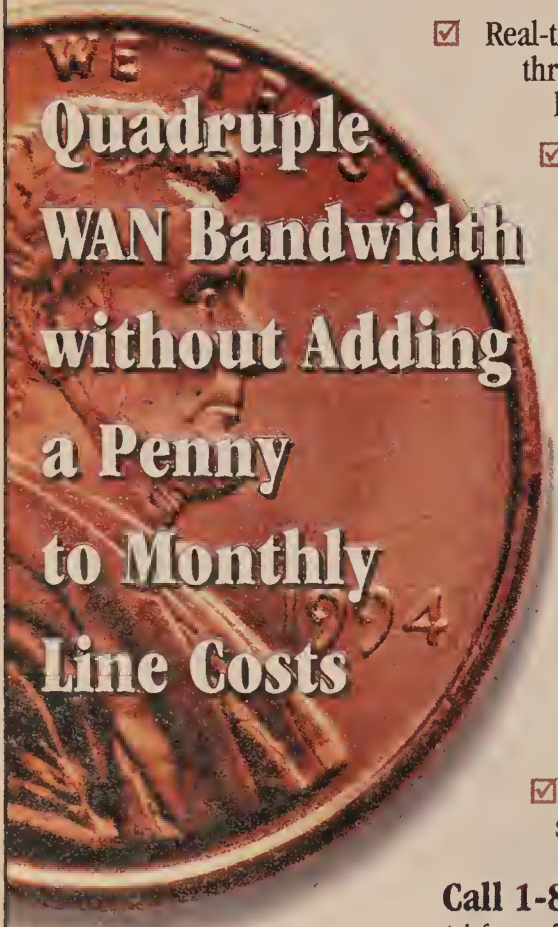

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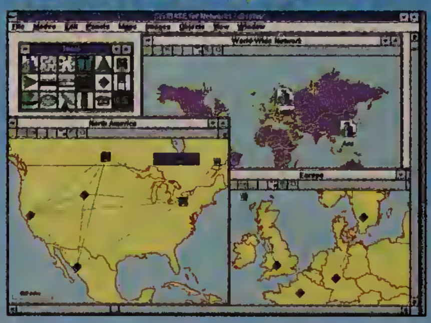

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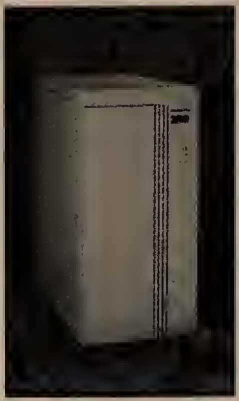

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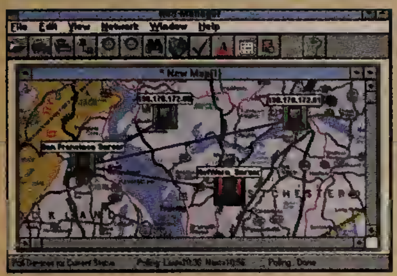

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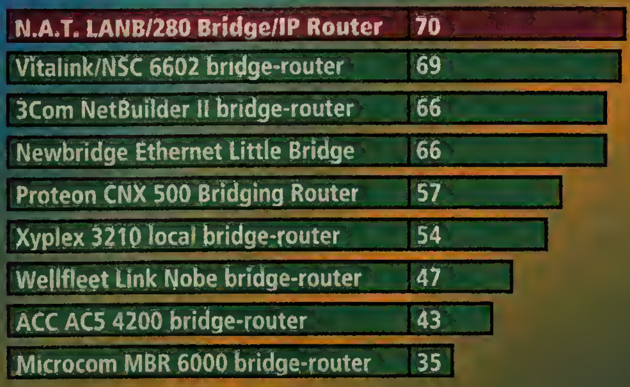

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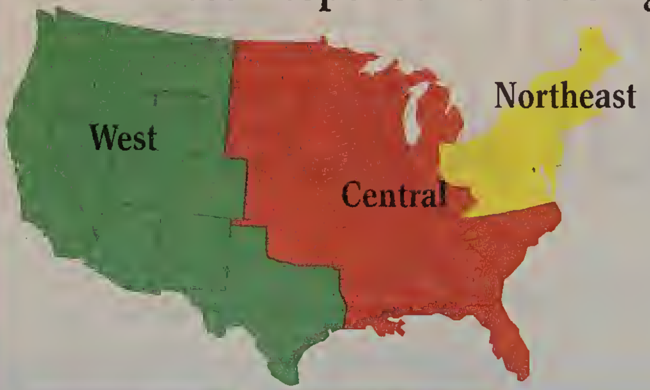

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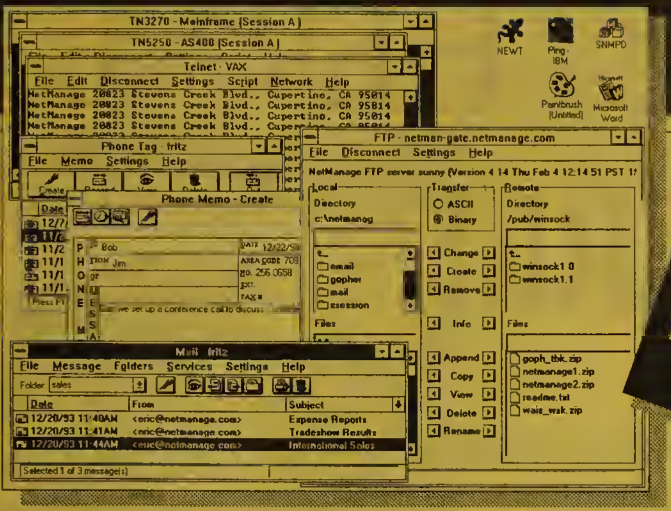

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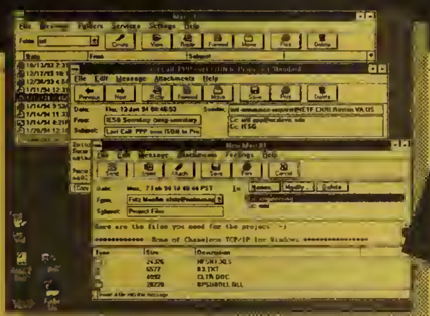

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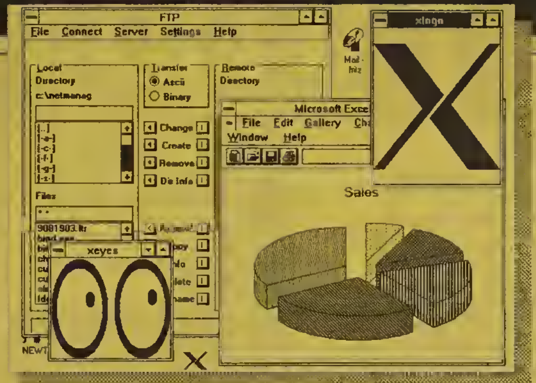

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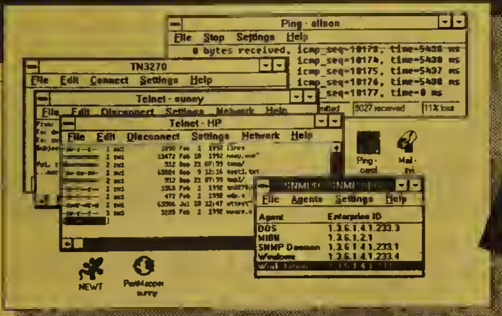

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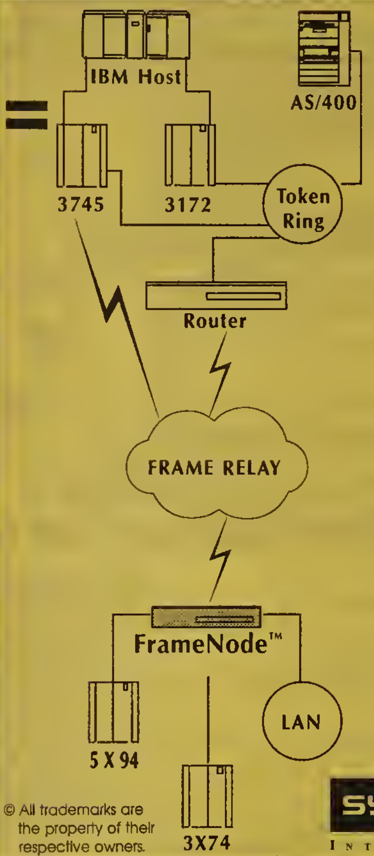

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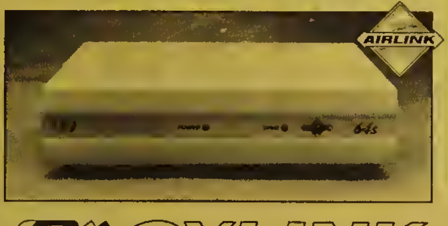

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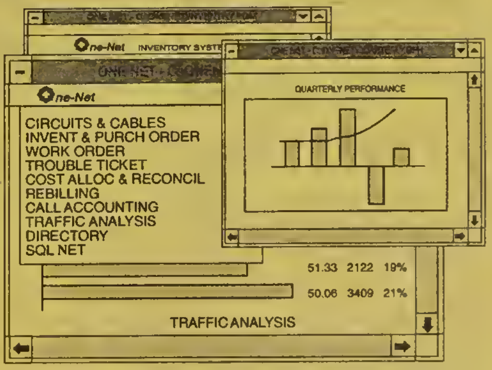

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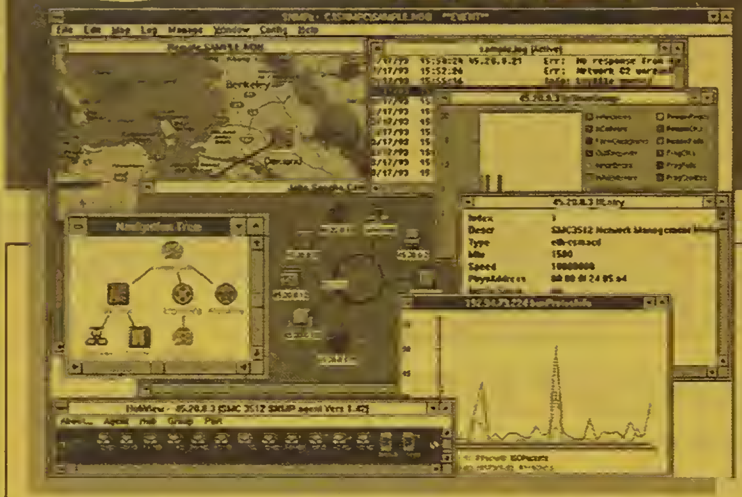

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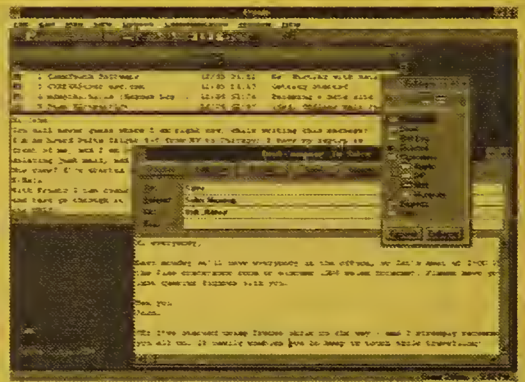

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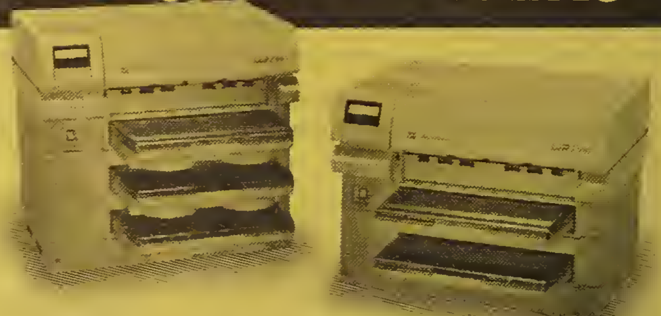

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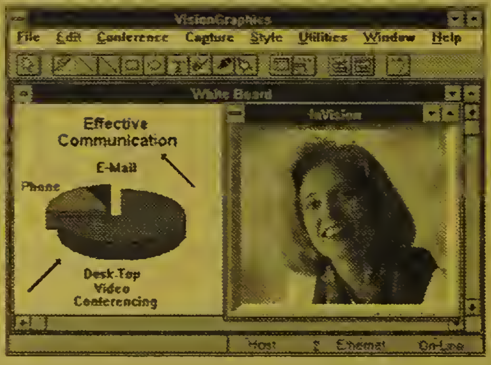

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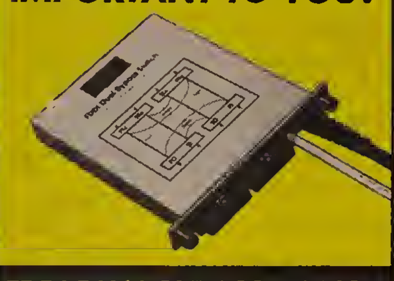

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And another thing...

"Wellfleet's future is ATM switches, not routers."
Todd Handel, Network engineer, Telephone Data Systems/Computing Services

* * *

"With switching, hubs are positioning themselves as being able to eliminate a lot of the router functionality."
Paul Edmunds, Senior information systems analyst, Duke Power Co.

* * *

"I'm happy to see that Wellfleet has finally answered my concerns about where its ATM technology was coming from."
Eric Epstein, Corporate network manager, Bose Corp.

* * *

"The question is how fast a tightly integrated product set can be delivered by this new company."
Jeff Marshall, Managing director of communications, Bear, Stearns & Company, Inc.

* * *

"The real benefits of this merger are probably 12 to 18 months down the road when we begin to see some integrated technology and products from these two. The question is, will the users wait?"
Fred McClimans, Principal, Decisis, Inc.

Merger

Continued from page 1

locations are 3,000 miles apart, and whether users are really interested in buying all their technology from one vendor.

Malone also sees a large stumbling block in that the majority of the SynOptics installed base has Cisco Systems, Inc. routers, not Wellfleet devices. "SynOptics is alienating its Cisco base," he said.

But Andy Ludwick, SynOptics' president and chief executive officer, claimed that the company is not abandoning anybody.

"We will continue to support our Cisco routing modules users and continue to build management applications for Optivity that will help those users manage those devices," Ludwick said in an interview after a press conference here.

Together, SynOptics and Wellfleet hope to deliver integrated hub/routing/switching products that should better position them to compete against Cisco, 3Com Corp. and Cabletron Systems, Inc. Those companies have already delineated product and marketing strategies for moving from router-based to switch-based internetworks.

Wellfleet and SynOptics bring technology to the table that will let them develop this new suite of products. SynOptics has its own Asynchronous Transfer Mode (ATM) and frame-switching technology, while Wellfleet has routing software it can add to the mix.

Users are anxious to see how the Wellfleet/SynOptics pair fares.

Wellfleet customer Louis Cureau, senior telecommunications specialist at New Orleans-based utility Entergy Corp., said he is excited about the deal.

"We were looking at migrating to [ATM] to start our backbone evolution in 1995," he said. "But I didn't see much of a role for Wellfleet in that kind of a net."

Alan Brown, director of engineering for Georgia's Peachnet, a statewide education and research net based in Kennesaw, Ga., said the deal answers some questions about Wellfleet's product plans.

"We've been asking Wellfleet for a long time to have some sort of integrated hub/router product," said Brown, whose organization uses Wellfleet routers. "Now that they are merging, I think that that's really going to happen."

SynOptics and 3Com user Amin Tejani, a systems analyst at Kaiser Permanente in Atlanta, believes the merger will help SynOptics focus on current user requirements with shared-media local networks as well as future ones with switched environments.

"SynOptics needed to do something big like merge with Cisco or Wellfleet," Tejani said. "They spent too much time focusing on ATM and ignoring the current market demands and user needs, which is why we've decided to standardize on 3Com hubs. ATM development is certainly necessary, but don't commit to it in such a way that you forget about the current market."

WHAT THE FUTURE HOLDS

While Wellfleet and SynOptics hash out the finer details of the merger, users and analysts are speculating about the future products that might emerge from the yet-to-be-named combined company. During the next year or two, the vendors said they will define a standards-based architecture from which to design and develop products that combine routing and switching technologies.

"Our future product plans include a suite of devices that will have ATM at the core and provide integrated routing and switching capabilities that will likely be in software form," said Paul Severino, president and founder of Wellfleet. "We are also working on router LAN emulation issues, running switched services over ATM and combining routing with an ATM switch. We expect to provide an ATM-architected product, with switching and routing products feeding that device."

Some users, such as Peachnet's Brown, believe routing functions in switched internetworks will be contained in a central server that will compute routes between switches and then download the information to switches' cache memory.

Others, such as analyst Jeremy Duke of In Stat, Inc. in Scottsdale, Ariz., think the companies will add routing logic to hub or switching hardware.

"I don't think they're necessarily going to have a whole distinct new product," Duke said. "They're probably just going to have a hybrid of what they already have. I think it's going to be very much like the CiscoFusion [strategy] and also like what 3Com announced with its switching strategy."

But will it even happen?

While users were busy applauding Wellfleet Communications, Inc.'s proposed acquisition of SynOptics Communications, Inc., industry observers pointed out that it may be premature to evaluate the deal since a number of obstacles must be cleared before anything can be finalized.

Wellfleet and SynOptics last week said the deal will take 90 to 120 days to close, citing the need to clear a legal and governmental review, get the go-ahead from the Securities and Exchange Commission and — most importantly — get approval from shareholders.

Therein lies the rub, according to Andrew Schopick, senior vice president of research at Nutmeg Securities, Ltd., a brokerage in Westport, Conn.

"Investors are financially driven, and when they look at the way this deal was put together initially, I'm speculating the Wellfleet shareholders will reject it," Schopick said. "The market reaction and resulting pressure on Wellfleet in particular has led to so much cynicism and skepticism over the merits of the deal that I question whether it will ever be finalized.

"SynOptics is not held in as high regard as Wellfleet and is not managed as effectively," Schopick added. "So when Wellfleet management cedes day-to-day control to SynOptics, it doesn't go down too well with shareholders."

Todd Dagres, vice president of equity research at The Robinson-Humphrey Company, Inc. in Atlanta, agreed.

"Given the negative impact this deal has had on Wellfleet stock, I'm willing to say it won't happen under the current terms and conditions," Dagres said. "I haven't seen a deal in the last year tied to valuation that has come off."

Wall Street itself gave the acquisition a definitive thumbs-down. The day the "merger of equals" was announced, the price of Wellfleet shares dropped 25%. SynOptics shares also fell, and both stocks continued to fall during the days following the announcement.

The anger of the shareholders was reflected in a series of lawsuits filed by both SynOptics and Wellfleet shareholders in an effort to block the deal, according to Danielle Danese, vice president of Solomon Brothers, an investment firm in New York.

"While the mechanics of the deal make it difficult for someone to come in and bid over Wellfleet, there is always a potential risk that shareholders can vote a deal like this down," she said. "Merging two large companies like this is very difficult, especially in the networking industry where product cycles move so quickly. But while shareholders aren't happy, I sense this will probably go through."

BY JIM DUFFY AND SKIP MACASKILL

NetView

Continued from page 1

SNMP to control LAN devices, whereas LAN NetView uses primarily the Common Management Information Protocol (CMIP). As a result, LAN NetView is limited to managing mainly IBM equipment outfitted with CMIP agents. Support for SNMP will give the new platform control over far more devices, such as routers, hubs and bridges from multiple vendors.

LAN NetView does have limited support for SNMP in that it can monitor some devices, but NetView for OS/2 will use SNMP to issue control commands, as well. Unlike its predecessor, the new platform will also support the automatic discovery of SNMP devices to build management databases and topology maps.

Other new features include a trouble-ticketing application and a net performance monitor.

Existing IBM LAN management products such as LAN Network Manager, which is an OS/2-based program for collecting problem status and diagnostic data from devices on Token-Ring nets, will be able to feed information to the NetView for OS/2 platform. It, in turn, will be able to pass data to host-based NetView and NetView/6000.

"NetView/6000 isn't going to be the enterprise management platform of choice for LAN management, it will be one of the platforms users can choose from."

There will also be significantly less memory required to run NetView for OS/2. To run at peak performance, LAN NetView requires about 32M bytes of memory, Rae said, but NetView for OS/2 will require only about 16M bytes.

Memory requirements for agent code that runs on managed workstations — including DOS, Windows, OS/2 and Novell, Inc. NetWare clients — are also expected to be cut in half.

"That is a big enhancement because LAN NetView took up some major real estate," said Paul Dolbec, director of distributed equipment with Unum Life Insurance Co. in Portland, Maine.

According to Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C., NetView for OS/2 also represents the start of IBM's long-term strategy to offer the same functions of its NetView/6000 SNMP-based management system on an OS/2 platform.

"What users will see is NetView/6000 without the Unix box," Dzubeck said. "There is a huge part of the user community that never wants to see a Unix box in their network. NetView/6000 isn't going to be the enterprise management platform of choice for LAN management, it will be one of the platforms users can choose from," he added.

PRODUCT HISTORY

NetView for OS/2 will also spell the end for LAN NetView. Originally known as LAN Focus, the product was announced in 1992 by IBM's Personal Systems division in Austin, Texas. That was seen as odd since most of IBM's management products are developed by the Networking Systems division here.

Two years later, the product has only been sold to about 100 users. In January, IBM shifted development of the product to Networking Systems.

"As a strategy, LAN NetView promised utopia; but in reality, it never delivered on those promises," said a source close to the LAN NetView development effort. "Once LAN NetView became a part of the enterprise management development team, it never stood a chance politically or strategically."

Rae said IBM feels NetView for OS/2 is the evolution of the LAN NetView product, not the death of it. But he declined to provide the upgrade strategy for existing LAN NetView users.

BT-MCI get in concert for VPN

BY BILL BURCH

Washington, D.C.

Concert — BT's and MCI Communications Corp.'s recently formed global partnership — last week was first out of the blocks in the race to introduce a wide-ranging international virtual network offering by launching service in Australia and Europe.

Using the companies' intelligent network in Europe, the Concert Virtual Network Service is available in Belgium, France, Germany, the Netherlands, Sweden and the U.K. BT has also announced that the Norwegian Telecommunications Administration will serve as a Concert distributor in Norway.

In Asia, service is available in the Pacific Rim, and Concert last week signed up its first Japanese distributor, Nippon Information and Communication, a joint venture of Nippon Telegraph and Telephone Corp. and IBM Japan. Concert plans to begin offering service in Canada and the U.S. during the fourth quarter, according to May Pao, a virtual network marketing manager for MCI.

According to the BT-MCI agreement, MCI is Concert's distributor in North and South America, while BT handles distribution in the rest of the world. The two companies also have struck a series of alliances for local agents to sell the service, including the Stentor long-distance alliance in Canada.

The structure of the Concert partnership is substantially different from AT&T's WorldSource alliance with Japan's Kokusai Denshin Denwa Company, Ltd., Singapore Telecom, Telecom New Zealand International, Telstra OTC Australia and Europe's Unisource. While BT and MCI have formed a joint venture that can provide customers with a single point of contact, working with WorldSource may not be as simple, according to Mark Langner, a senior consultant at TeleChoice, Inc. in Verona, N.J.

"If you've got a problem with service, who are you going to call?" Langner asked. AT&T may do just as well as Concert at providing a single integrated network, but local partners are going to want to do things their own way to some extent, he added.

Sprint Corp.'s partnership with Eunetcom, an alliance between Deutsche Bundespost Telekom and France Telecom, is even more loosely defined at this point, according to Langner.

For all three ventures, factors such as regulatory changes and battle for account control will shape the range and quality of services, he said. In the U.S., Concert has received a Department of Justice endorsement and is awaiting approval from the Federal Communications Commission.

The global virtual network market could prove tough for MCI. The carrier is trying to sell Concert's virtual private net service to Holiday Inn Worldwide in Atlanta, but the hosteler is proving a difficult sell.

The chain has motels in 52 countries, principally in Europe, North America and Southeast Asia, but is not in the market for a global virtual private network, according to Dick Smith, Holiday Inn Worldwide's senior vice president of information technology.

"We have a virtual private network now from here to the U.K.," the location of Bass, p.l.c., Holiday Inn Worldwide's parent, Smith said. "So there's no benefit there to us at all.

"And for the other countries, I can't see us signing any kind of a virtual private network agreement with them because we don't have enough traffic to justify it," he added. Outside the U.K., Holiday Inn Worldwide's traffic costs less than $100,000 per month.

Integrated apps

Continued from page 1

mainframe at service bureau Computer Power, Inc. in Jacksonville, Fla. It integrates a FileNet Corp. document imaging and work flow system, an automatic call distributor and IBM's NetView DM software distribution module.

The application also handles full-motion video, audio and animated graphics as well as calculates amortization rates, rendering the calculators obsolete.

"Object technology is about the only thing we haven't done in this project," Serif said. "It was tricky, to say the least."

Serif's Applied Technology group created the integrated workstation with the help of a task force of about 25 people from various departments. The developers themselves worked on the same floor as the customer service reps, "which was very nice; we got a lot of instant feedback on different components," said Daniel Vermeire, senior technical specialist at Huntington.

Tips for the masses

- ☑ Application and equipment integration is still difficult at the component level. Plan ahead and get complete technical specs from vendors about the functions you want to integrate.
- ☑ Consult with users before setting a development plan in concrete. Show them a prototype, and continue to get feedback throughout development.
- ☑ Document everything and keep it up-to-date.

It took five to 10 programmers a year to develop the application, which runs entirely on clients — Intel Corp. 486-based personal computers with 24M bytes of random-access memory running OS/2.

The 60 workstations are linked to each other and to two other departments via Transmission Control Protocol/Internet Protocol over a token-ring network.

A package of IBM CallPath products is used to collect identification data from the caller, which is then used to gather caller account information from the various Unix and mainframe databases. If necessary, data is also collected from the remote service bureau mainframe, which is tied in via a 56K bit/sec leased line. By the time a representative picks up the phone, all data on a customer's past loans and current bank business is displayed on their workstation screen.

Because the application is still new, it fully succeeds in gathering all that data only 50% to 75% of the time, but Serif said the company is working out the bugs and expects the hit rate to rise.

One of the flashier components of the application is a multimedia training program that pipes live-action voice and video to representative's desktops. Designed to teach reps how to sell new bank products to customers, it includes a quiz and automatically prints them diplomas when they pass.

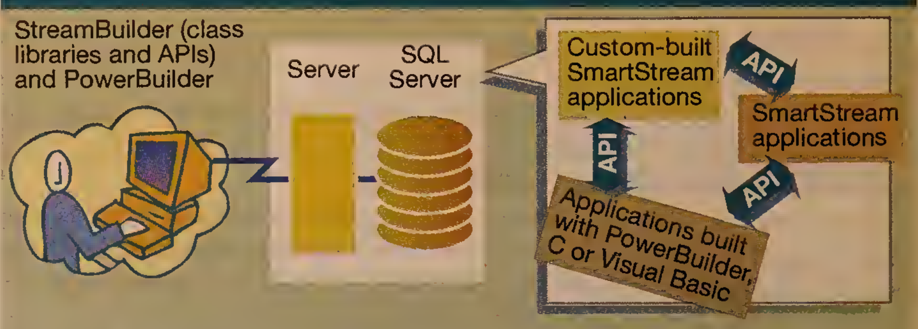
"We want to keep the customer service reps as close to the phones as possible," Serif said. "If you pull them away from their desks to watch video in a conference room, and all of a sudden you've got a big call load, you're not prepared for it."

The application also takes incoming facsimiles through FileNet's I/O fax engine and moves them into the document processing system automatically using FileNet application program interfaces so they do not have to be scanned in.

Serif would not put a number on how much money the application has saved Huntington, but said there were "tremendous productivity gains" and the company was able to reduce head count somewhat.

The main benefit, however, is increasing customer satisfaction and gaining new business. "When you've got customers calling up and asking about documents, and the [reps] can't answer their questions, that's pretty annoying for the customers," Serif said. "There is a considerable payback to this."

How StreamBuilder works


StreamBuilder (class libraries and APIs) and PowerBuilder
Server
SQL Server
Custom-built SmartStream applications
API
SmartStream applications
API
API
Applications built with PowerBuilder, C or Visual Basic

Using StreamBuilder and PowerBuilder, a corporate developer will be able to create Sybase SQL Server-based SmartStream applications. These will work with off-the-shelf SmartStream applications and applications created with other tools.

GRAPHIC BY SUSAN J. CHAMPENY

D&B Software to let users add on to work flow product

BY KEVIN FOGARTY

Atlanta

Dun & Bradstreet Software plans to release later this year a tool to help users create custom applications that use the work flow and application integration capabilities of its SmartStream product line.

StreamBuilder is designed to let customers develop their own simple SmartStream-compatible client/server applications and tweak existing SmartStream programs to their liking. They can also use it to link other vendors' applications into SmartStream work flow environments.

Scheduled for beta-testing in August and general release during the fourth quarter, StreamBuilder consists of a series of class libraries that run on top of PowerSoft Corp.'s PowerBuilder application development tool.

StreamBuilder gives users access to the same tool kit D&B Software uses to develop the client portion of its SmartStream applications, said Gail Goodman, director of product man-agement.

The product is not, however, designed for building enterprise-level applications such as the SmartStream modules.

The customization and application development features are nonetheless important, and even more attractive is the ability to tie custom-designed or vertical-market applications into an existing SmartStream work flow model, said Doug Gosling, manager of financial systems at Toronto-based utility Ontario Hydro.

Using the product's work flow application program interface, developers can let programs written in C, Microsoft Corp.'s Visual Basic and PowerBuilder take advantage of SmartStream's work flow functions.

"If you really want to use SmartStream as an enterprisewide solution, then something like StreamBuilder becomes a necessity because no one vendor delivers everything," Gosling said.

The class libraries consist of common SmartStream functions, including the ability to tie into SmartStream's work flow, security and validation, menu and tool bars, and application query features.

DEVELOPERS WORKBENCH

StreamBuilder also includes a Developers Workbench, which lets developers define the tables, security and other features of a new application. It also lets them create SmartStream work flow models around the application by defining each step of a function, the messages generated during the activity and to whom the next activity should be assigned.

> **"If you really want to use SmartStream as an enterprisewide solution, then something like StreamBuilder becomes a necessity," Doug Gosling said.**

The Workbench contains a generator that can produce SQL source code based on tables defined in StreamBuilder.

It can also generate SQL code to create stored procedures for the Sybase, Inc. database engine.

If the tool works as advertised, it will be a great confidence builder for SmartStream users, said Jennifer Sholze, senior analyst at market research firm International Data Corp. in Framingham, Mass. "It would ensure users that they could modify code on their own and not be locked into what the vendor provides."

D&B Software is also readying two new SmartStream applications to be delivered by the fourth quarter, Manufacturing Stream and Distribution Stream.

The products, which are designed to manage just-in-time manufacturing and distribution systems, run on Hewlett-Packard Co. HP-UX and Data General Corp. DG-UX servers with Windows or DOS clients, and support IBM LAN Server, Microsoft LAN Manager, Novell, Inc. NetWare and Transmission Control Protocol/Internet Protocol networks.

Initial releases will lack activity cost analysis and reporting features, but they will be added in 1995.

Prices for all three products will be set later this year.

ARDIS sale could speed net expansion

Motorola readies to buy out IBM's share of the joint venture company.

BY JOANIE WEXLER

Lincolnshire, Ill.

After months of discussion, Motorola, Inc. has agreed to buy out IBM in the companies' ARDIS Co. wireless network venture.

Single-company ownership of the 4-year-old venture could hasten net expansion and capacity upgrades, observers said, because Motorola, which manufactures radio modems and wireless personal communicators, has a vested interest in promoting the network's use.

A company spokesman said Motorola's goal is to expand the field service emphasis of ARDIS to applications for the business traveler and general consumer market. The incentive is to spur the use of wireless devices such as Motorola's forthcoming Envoy personal communicator, according to a spokesman.

However, Motorola will ultimately seek other partners "because our general philosophy is to focus on manufacturing," he said.

Motorola will ultimately seek other partners "because our general philosophy is to focus on manufacturing," according to a company spokesman.

IBM echoed this reason for divesting itself of its 50% equity share. "After viewing the wireless world through the eyes of a network operator, we've determined our strengths are in products and related services, rather than running the network," an IBM spokesman said.

IBM will continue to work on ARDIS development projects already underway. For example, ARDIS said 6,000 ARDIS-compatible PCMCIA modem cards are slated to ship by the end of the year for IBM ThinkPad portable computers.

"IBM has lost patience with ARDIS as a commercial service," said Ira Brodsky, president of DataComm Research Co., a consultancy in Wilmette, Ill.He pointed out that IBM has also become a big supporter of Cellular Digital Packet Data, an emerging, competing technology.

Others said that, as the sole owner of ARDIS, Motorola's dominance as a wireless modem maker could make suppliers shy away from developing interfaces for the ARDIS network. The ARDIS architecture is considered closed because the interface for developing ARDIS-compatible applications is available only from Motorola.

Neither IBM nor Motorola would confirm the $35 million ARDIS purchase price estimated in *The Wall Street Journal* last week.

However, "Motorola has committed to many, many millions of dollars over a five-year business plan," said Mary Jane Grinstead, senior vice president of marketing and sales at ARDIS. She said the Motorola investment commitment is important for continuing the upgrade of the ARDIS net from 4.8K to 19.2K bit/sec.

At 4.8K bit/sec, the network "is antiquated," said consultant Andrew Seybold, who publishes the "Outlook on Mobile Computing" newsletter in Boulder Creek, Calif. He expects ARDIS to bid for personal communications services narrowband spectrum licenses, "because if they can get some 50-KHz channels, they can go to a much higher speed. That makes the net more valuable."

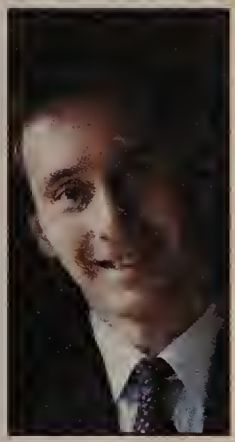
ARDIS provides radio data communications services in more than 400 metropolitan areas. ARDIS President Frank Wapole will continue to manage the company, and the transaction is subject to a definitive agreement and regulatory approval.

Public key

Continued from page 8

issuing digital signature certificates to all employees. "It's easy to do within one enterprise," O'Higgins said. "But the interenterprise applications hasn't started to happen, and that's where a government public-key infrastructure would help."

A new study on legal issues faced by the government in the effort warns that a federal certificate authority must establish strict equipment and personnel requirements for the certificate-issuance process and ac-cept some liability for improper actions.



BAUM

The study, "Federal Certification Authority Liability and Policy," authored by Michael Baum, principal at Independent Monitoring in Cambridge, Mass., points out that the federal government can claim sovereign status protecting it from lawsuits.

But in his report, Baum notes that the commercial sector will not be ready to accept public-key certificates issued by the government for use in electronic commerce unless the government accepts some liability for its actions.

"This is the foundation on which electronic commerce will be built," he said.

Setting clear security standards for both the equipment and personnel involved in issuing public-key certificates makes sense, added O'Higgins.

"We absolutely have to have a security policy in this," he said.

RBHCs

Continued from page 6

decree hurts both the Bells and U.S. consumers, the Bells said.

The industry has become too complex for Greene to oversee, according to the filing, and it is time the judge turned regulatory responsibility over to "the federal and state administrators who are specifically charged with exercising it."

As an incentive, the Bells told the judge that one study predicts overall long-distance rates could fall by more than 50% during the next five years if they are let into long distance.

The Bells' potential long-distance competitors reacted with predictable hostility: "The Bell operating companies are following their standard practice of muddying the waters to preserve their monopoly over local service while trying to extend it into the long-distance industry," MCI Communications Corp. stated.

AT&T agreed. "We believe a comprehensive review would find that the local monopoly is still firmly entrenched," the firm said.

MCI backed the bill offered by Sen. Fritz Hollings (D-S.C.) and currently being considered in the Senate, which would bar the Bells from long distance until they face competition in the local loop.

The filing gives Greene the chance to review the decree in its entirety, and he can decide to allow the RBHCs into the manufacturing and long-distance businesses. While the Bells' control of the local loop could make it difficult to convince Greene they deserve entry to that market, safeguards against self-dealing and cross-subsidization could be enough to convince a court to let the RBHCs into manufacturing.

At the FCC, Chairman Reed Hundt last week supported competition. "If you talk to the business user community, they will tell you that . . . they want competition in all phases" of telecommunications, he said.

Senior Washington Correspondent David Rohde contributed to this article.

SNMP

Continued from page 1

other vendors in the future.

Netcool/3 consists of several parts, including object-based agents that reside on database servers and clients; object managers, or brokers, that sit on database servers or other servers; and middleware that provides communications between agents and object managers. Also included is management console software for accessing the object managers.

The agent software, called Object Personality Modules (OPM), provides network administrators with information about the databases and applications.

"OPMs are essentially SuperMIBs, describing all functions of the object to be managed, including management protocol, structure of management information and the [Management Information Base] data," said Mike Silvey, software marketing manager at Micromuse.

The OPMs collect fault and performance data from their objects and forward that information to object managers via the Micromuse's middleware, dubbed Netcool/Paradise. The middleware can support a host of protocols, including SNMP, SQL and Transmission Control Protocol/Internet Protocol.

Because the system is object-based, net administrators do not need to know the physical location of the databases and applications they are monitoring. They simply make a request for data on a certain object, and the local object manager fetches the data from wherever it resides on the net.

The software is designed in such a way that if two net administrators request data at the same time about the same object, the response is automatically propagated to both of them, ensuring data integrity.

Netcool/3's management console software runs on workstations equipped with Sun Microsystems, Inc. SunOS or Solaris, HP-UX or AIX. As such, it can serve as an element performance and fault manager for net administrators on SunNet Manager, NetView and OpenView stations.

Database management is becoming an increasingly important issue as more users begin distributing databases across enterprise nets using technologies such as replication and two-phase commit. A number of the leading database vendors, including Oracle and Sybase, are working to develop an SNMP MIB for database management.

Industry watchers said Netcool/3 will further the integration of application and network management.

"This kind of product is definitely needed. There's not enough integration between database and network management," said Jill Huntington-Lee, a principal at Brandywine Network Associates, a Cinnaminson, N.J., consultancy.

Micromuse has not yet set pricing for Netcool/3.

©Micromuse: 011-44-081-875-9500.

Comments?
See "Contacts" box on page 2.

NETWORK WORLD

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